

(NASA-CR-165562-Vol-3) YF 102 IN-DUCT
COMBUSTOR NOISE MEASUREMENTS WITH A TURBINE
NOZZLE, VOLUME 3 Final Report (Avco
Lycoming Div.) 244 p HC A11/MF A01 CSCL 20A

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e3/71 09377

FINAL REPORT

VOLUME III

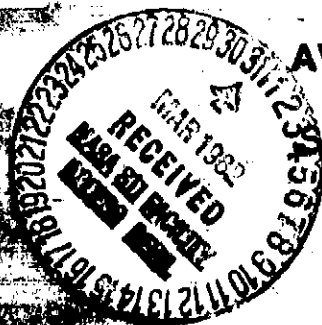
YF 102 IN-DUCT COMBUSTOR NOISE MEASUREMENTS WITH A TURBINE NOZZLE

by

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and

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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CONTRACT NAS 3-21974

NASA LEWIS RESEARCH CENTER
Cleveland, Ohio

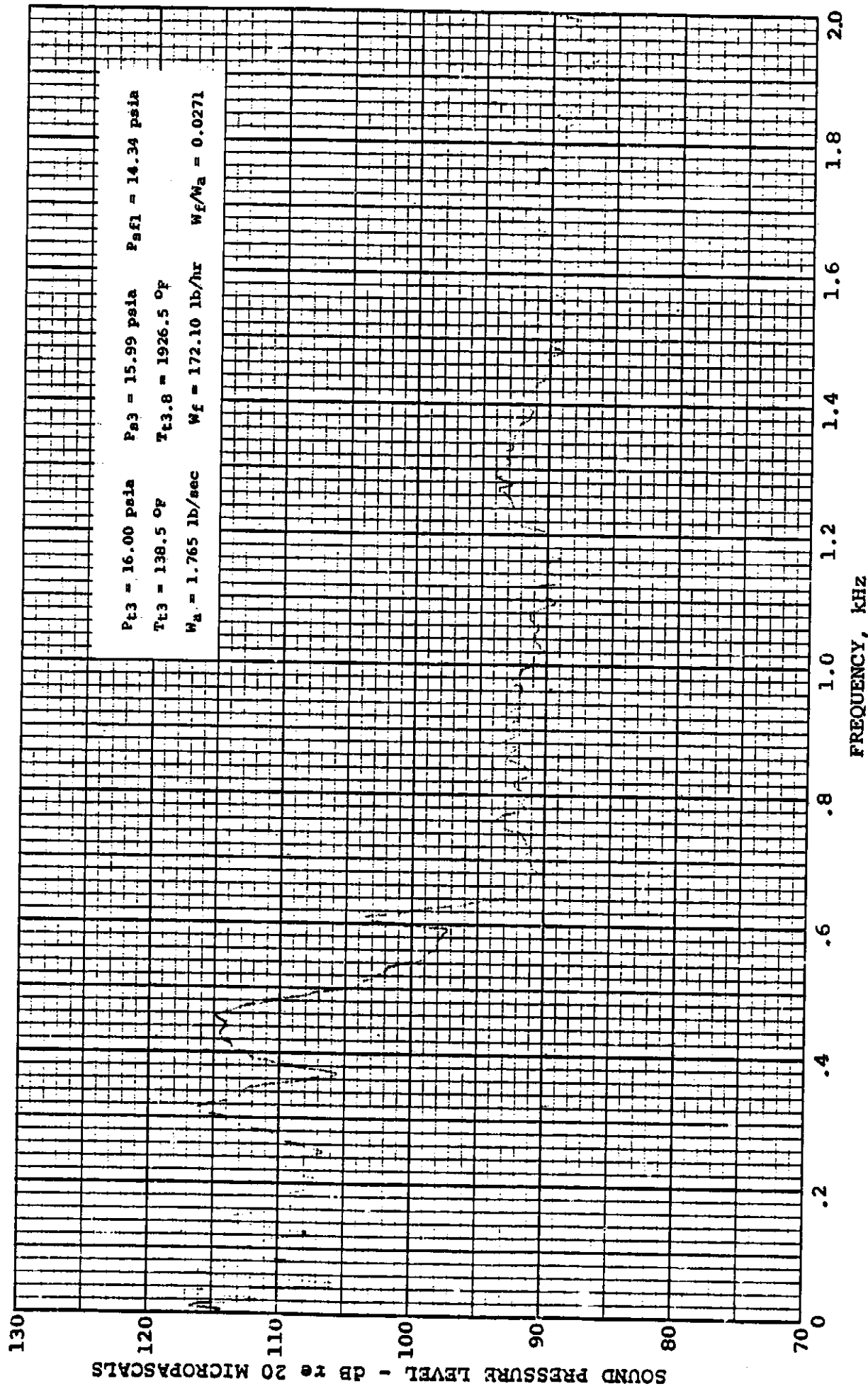
APPENDIX C

NARROW BAND PRESSURE LEVEL SPECTRA

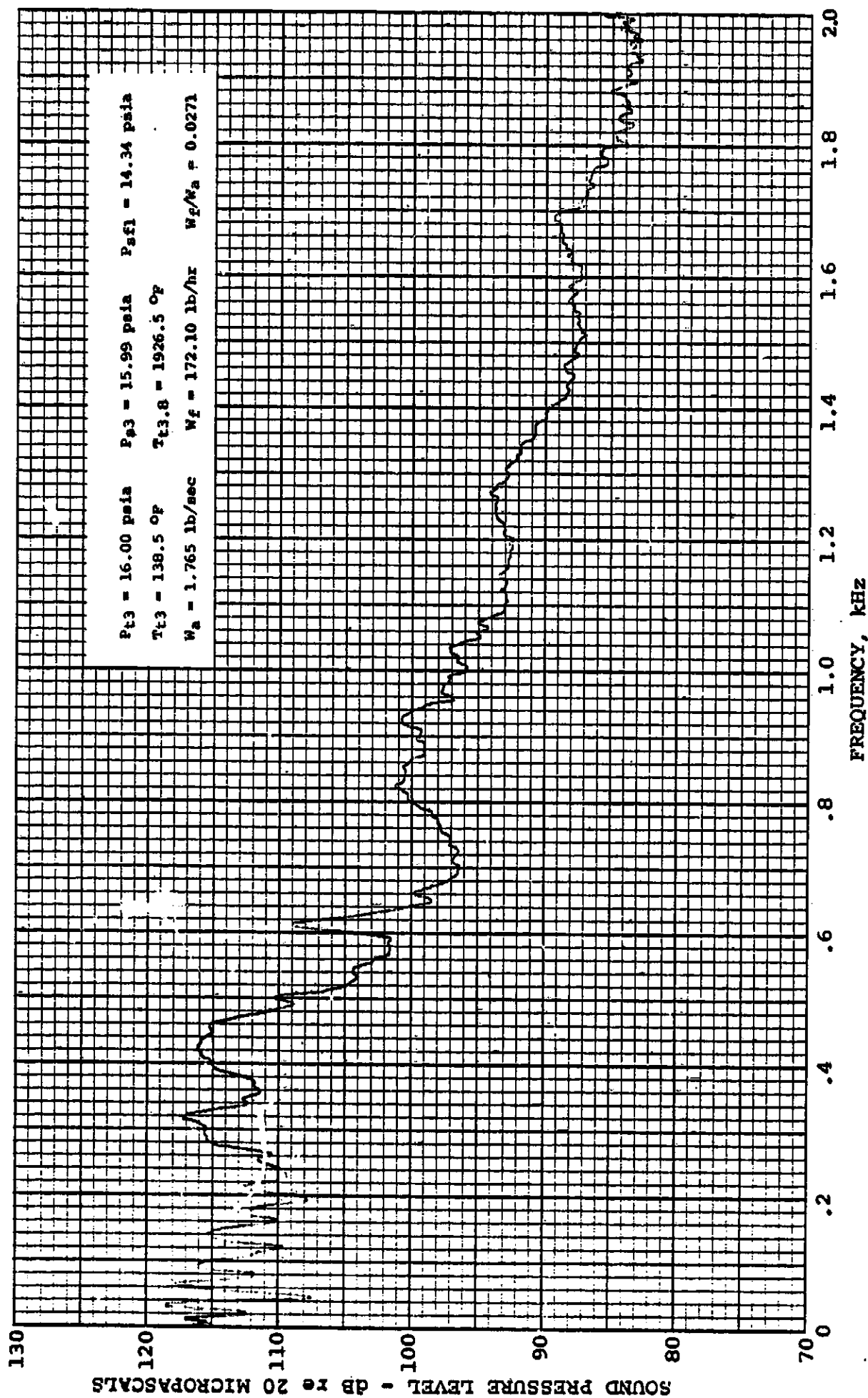
<u>Group</u>	<u>Pt3 (psia)</u>	<u>Run Number</u>	<u>Off-Design Wf/Wa (%)</u>
I. YF102 Operating Points with nozzle guidevaness	16	136	-
	20	132	-
	27	133	-
	37	102	-
	45	103	-
	54	106	-
	64	107	-
	80	110	-
II. YF102 High-Pressure Heat Release Rate Variation with nozzle guidevaness	65	105	0
	54	112	50
	54	138	75
	54	137	125
	54	113	150
III. YF102 Low-Pressure Heat Release Rate Variation with nozzle guidevaness	16	131	50
	16	134	75
	16	135	125
IV. YF102 Operating Points without nozzle guidevaness	16	236	-
	20	232	-
	27	233	-
	37	202	-
	45	203	-
	54	206	-
	64	207	-
	80	210	-
V. YF102 Zero Fuel Flow without nozzle guidevaness	54	205	-

APPENDIX C

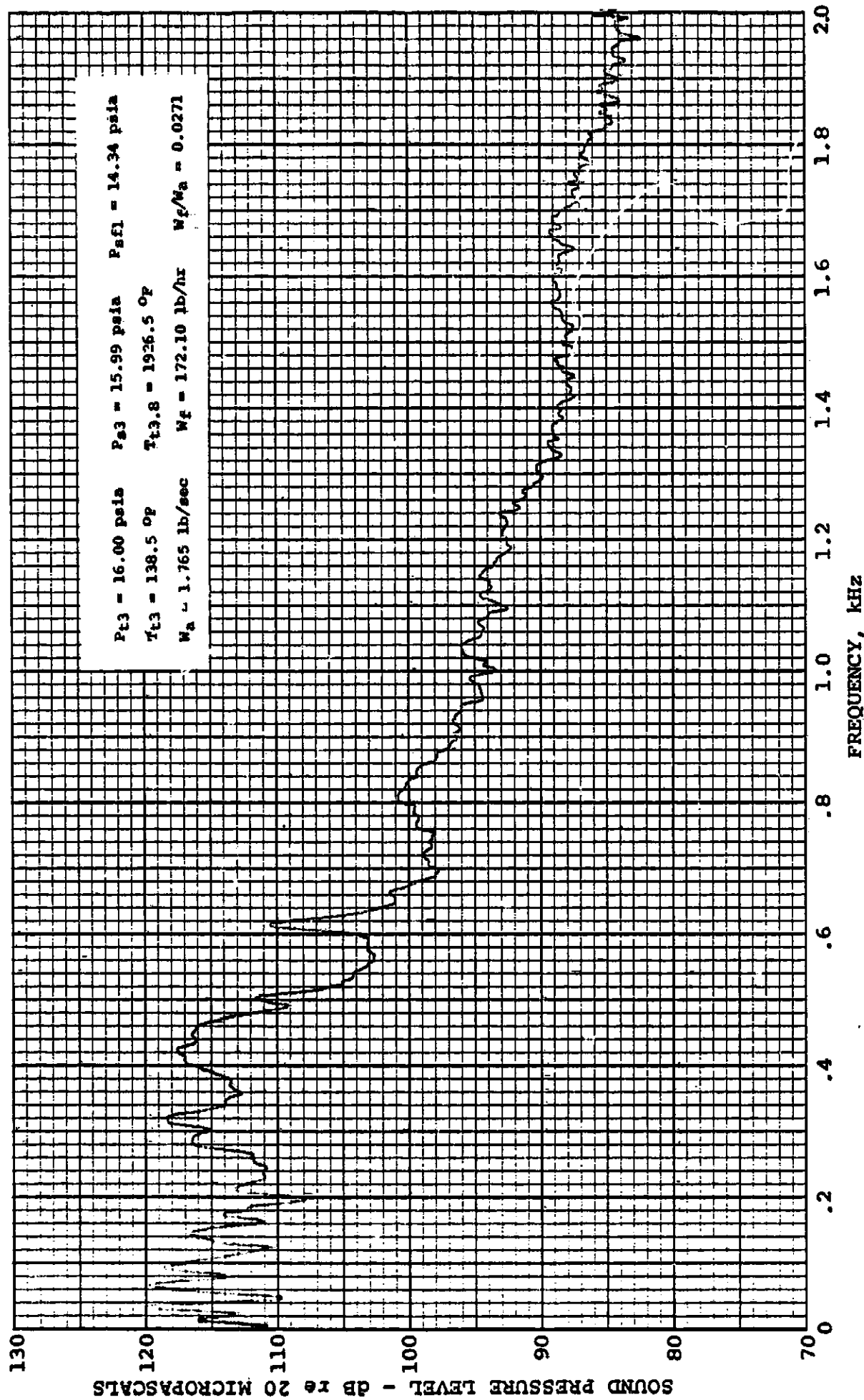
GROUP I



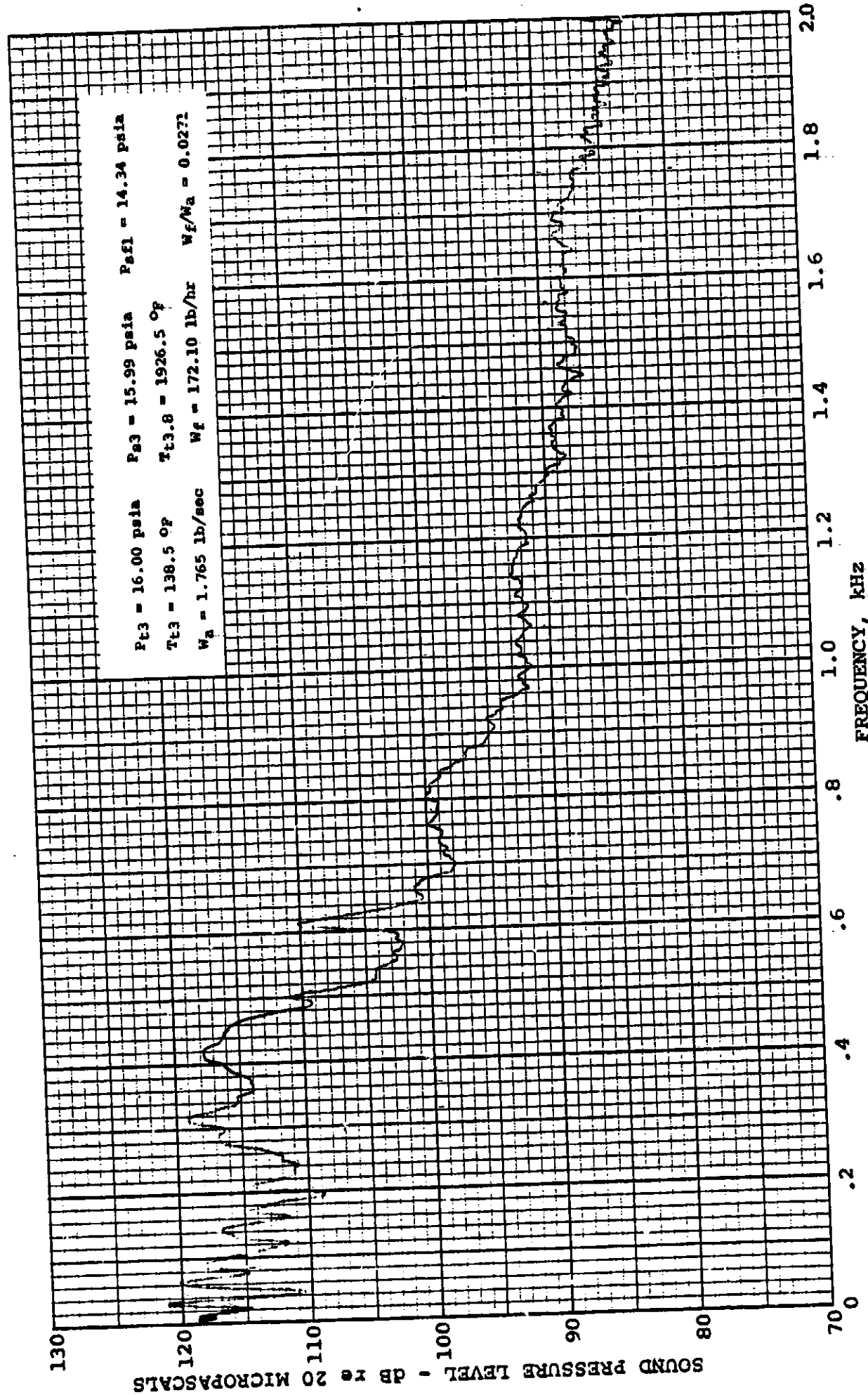
NARROW BAND SPECTRUM AT PROBE NUMBER 1 DURING RUN POINT NUMBER 136



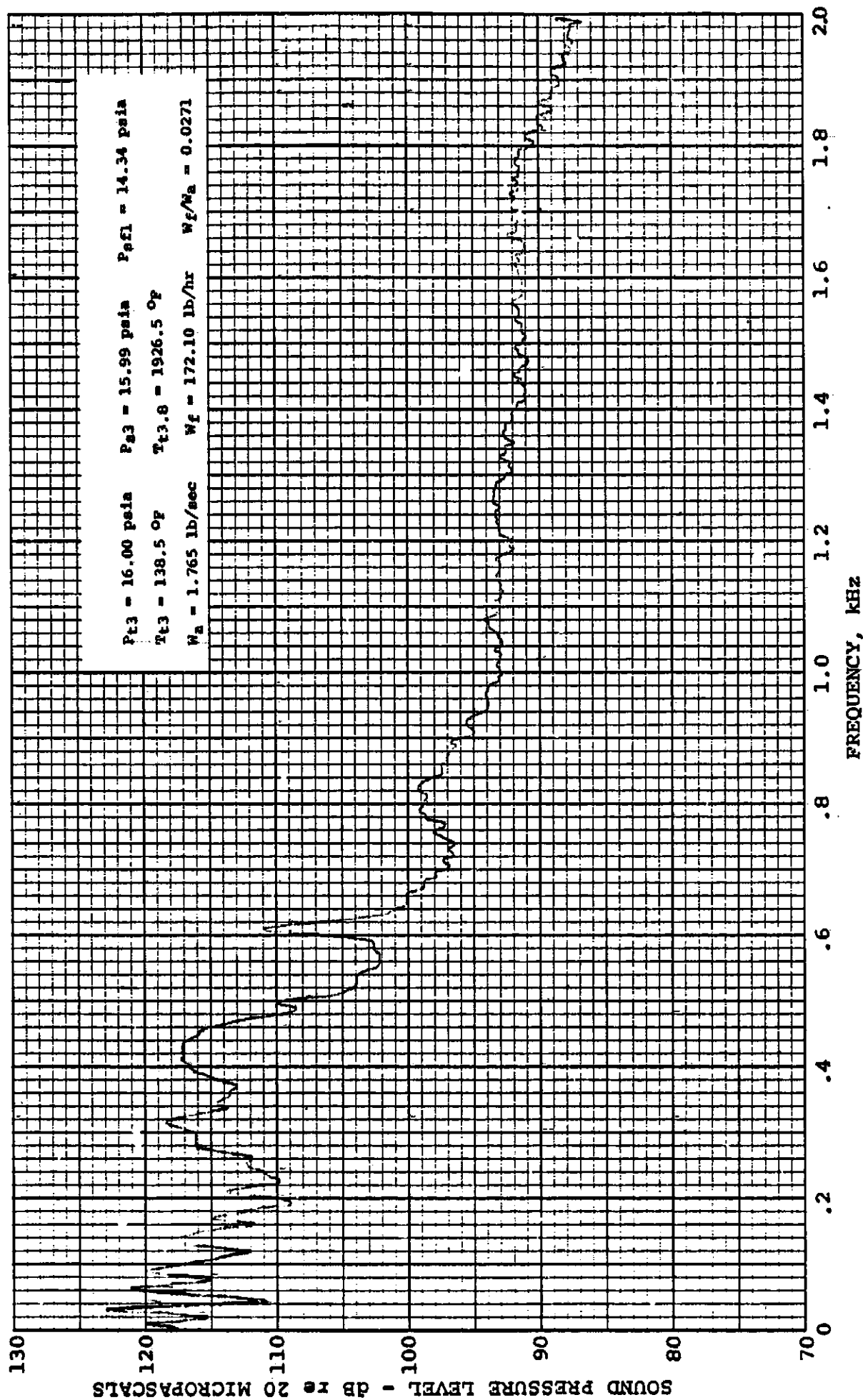
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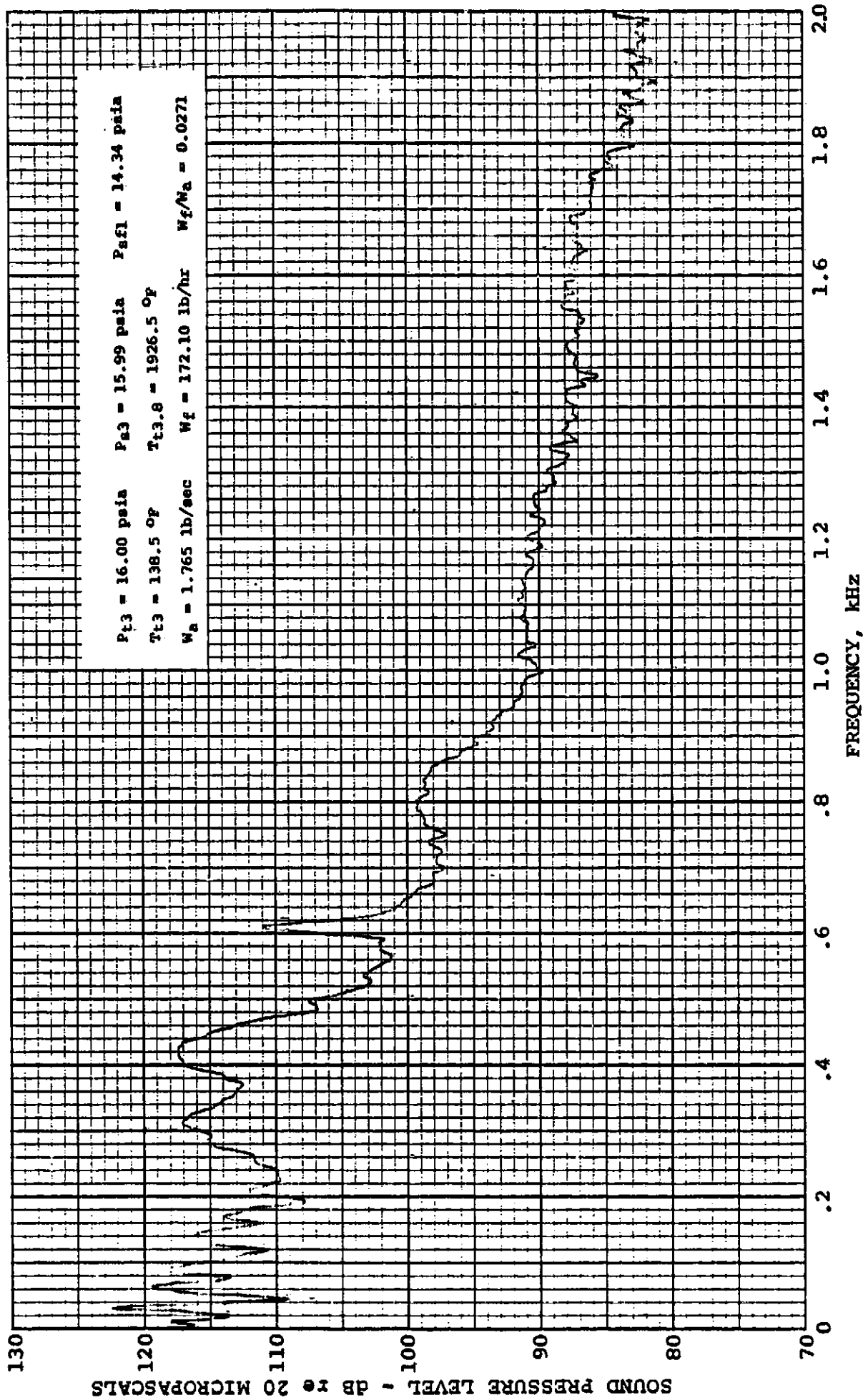
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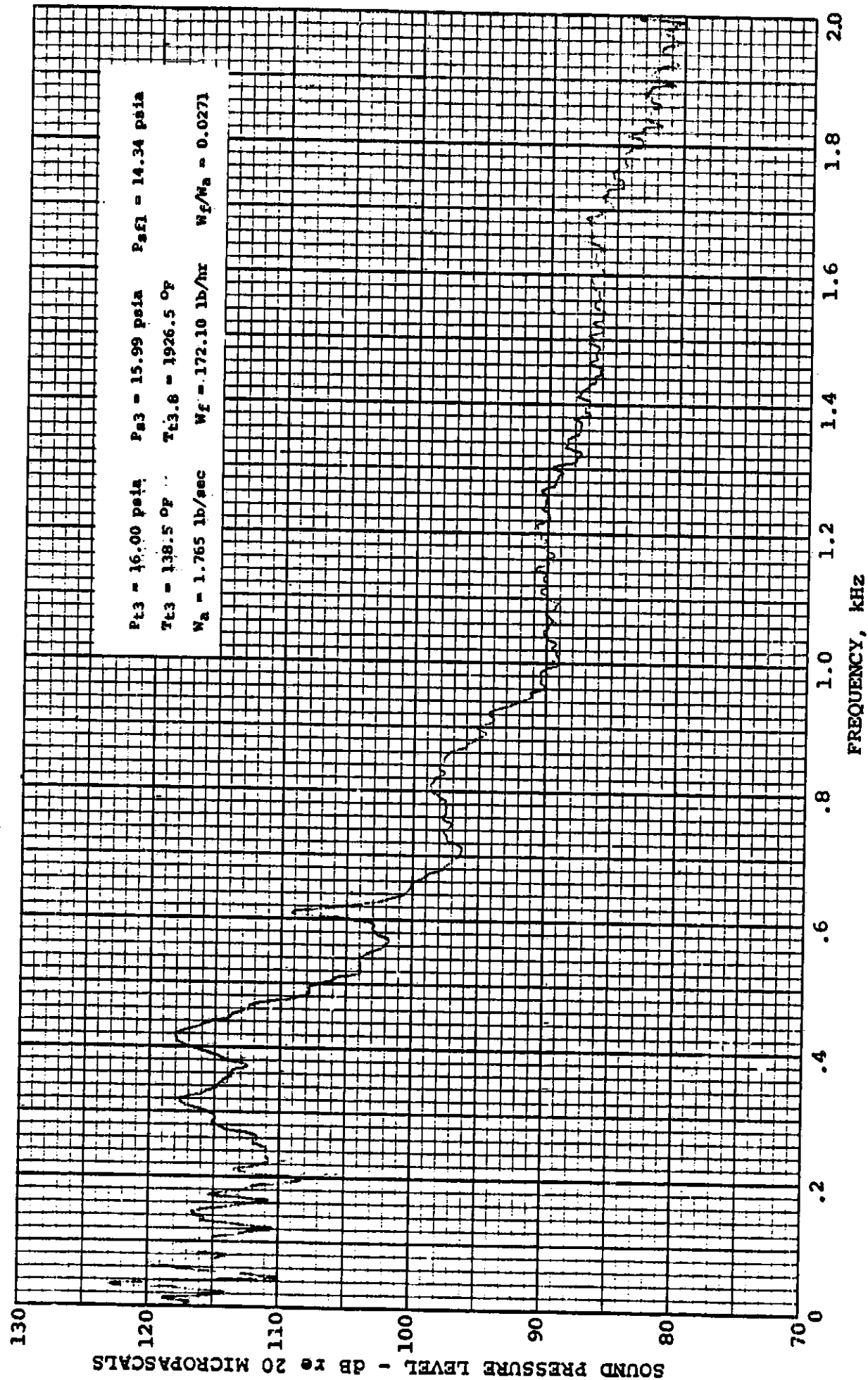
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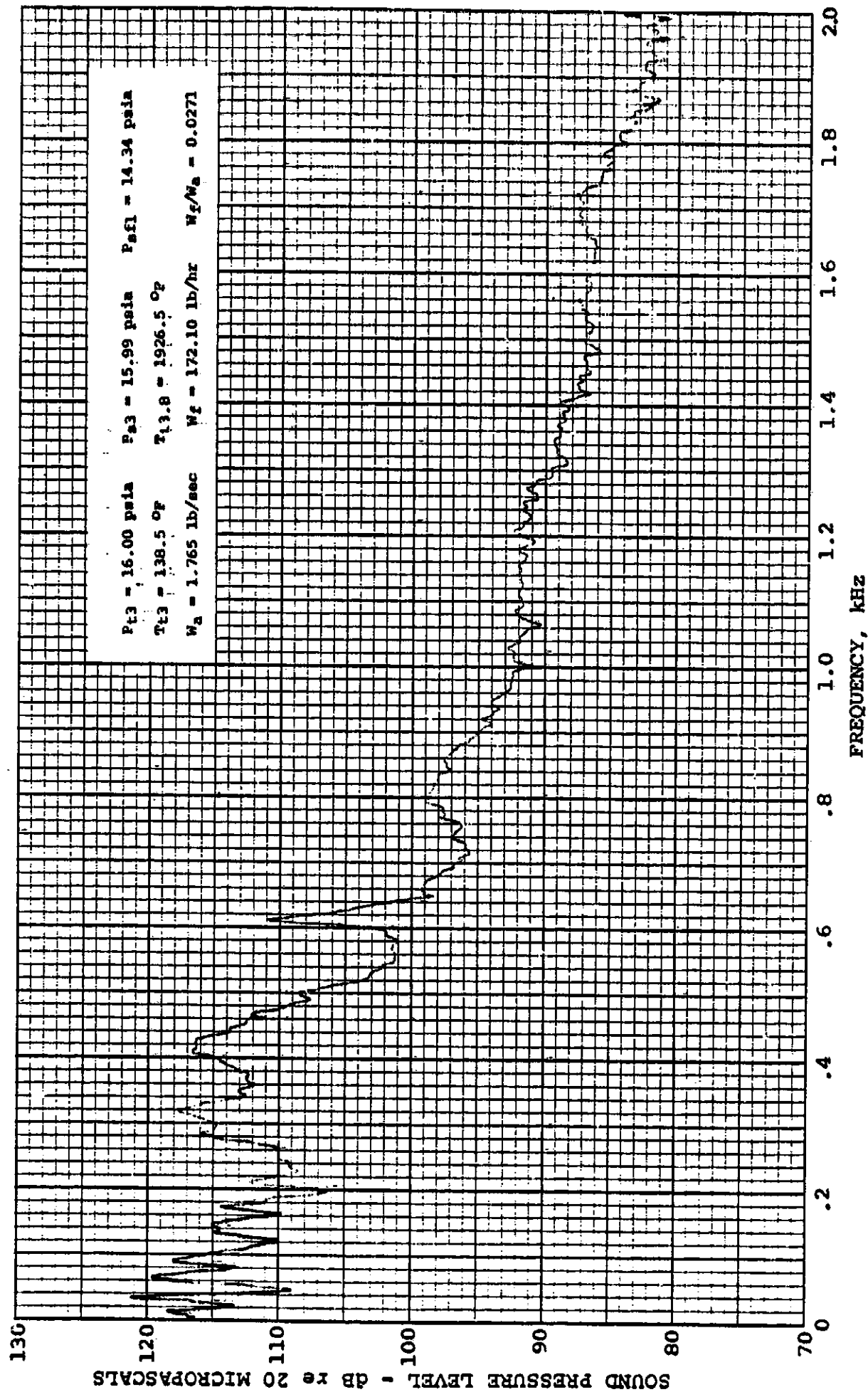
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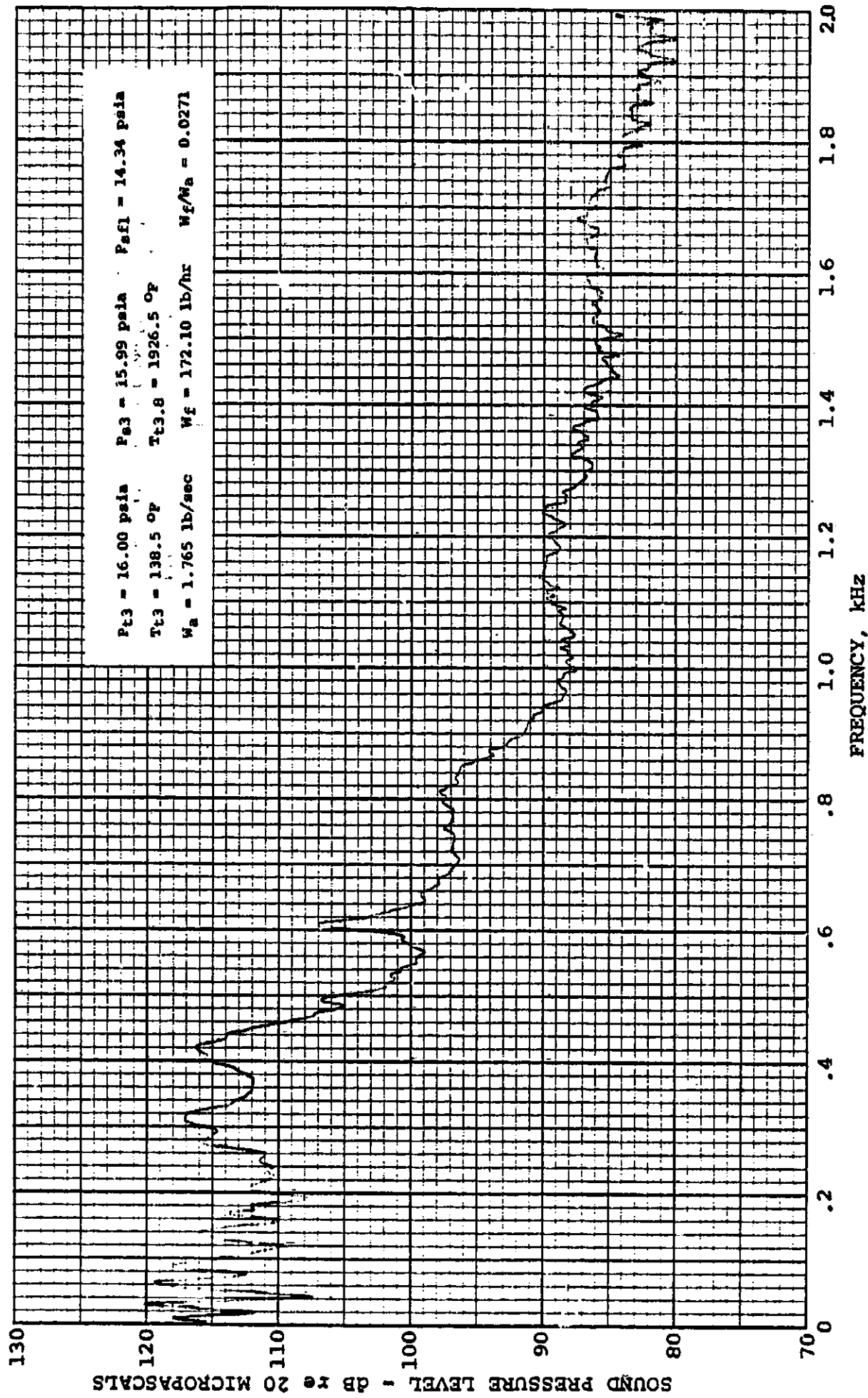
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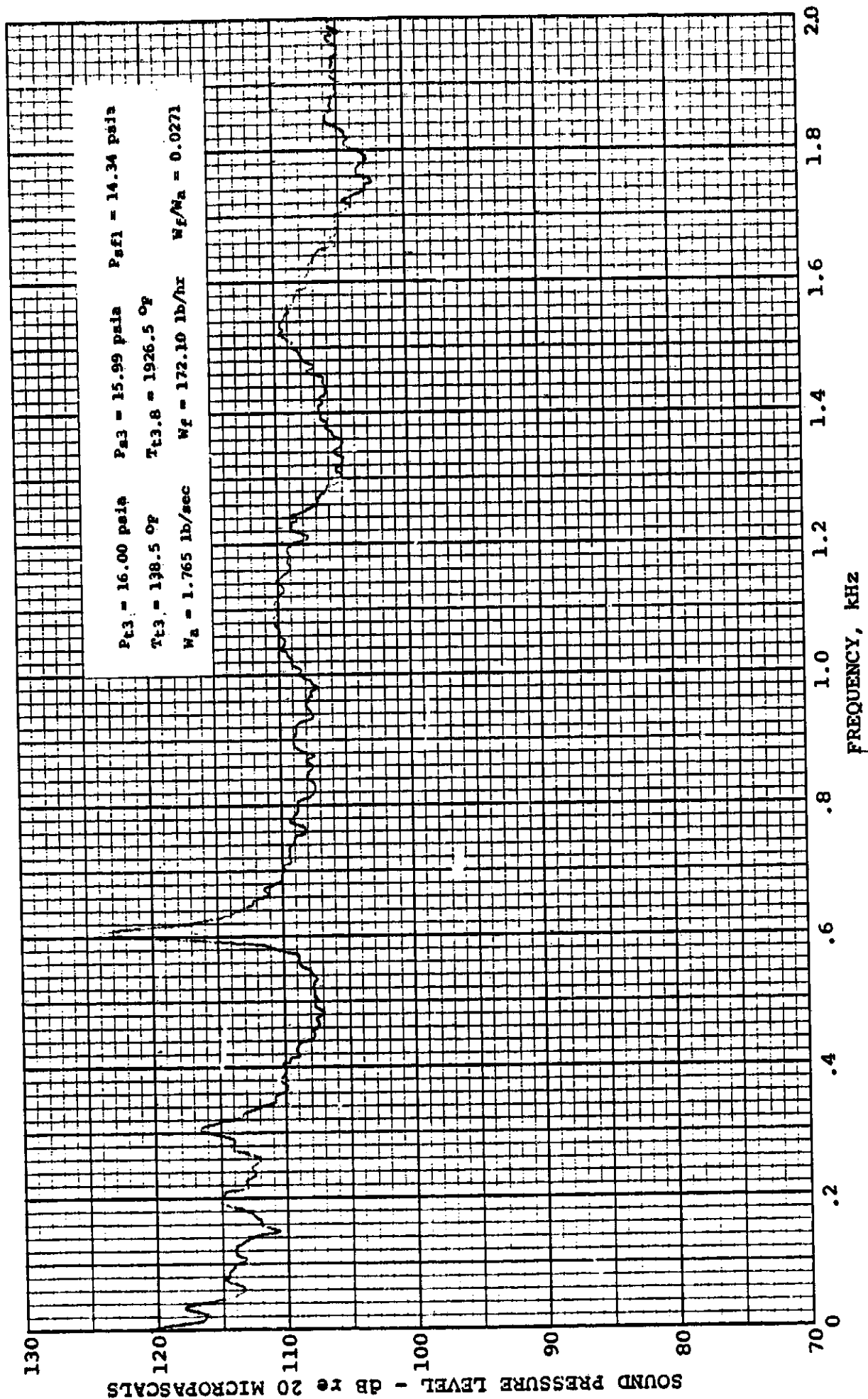
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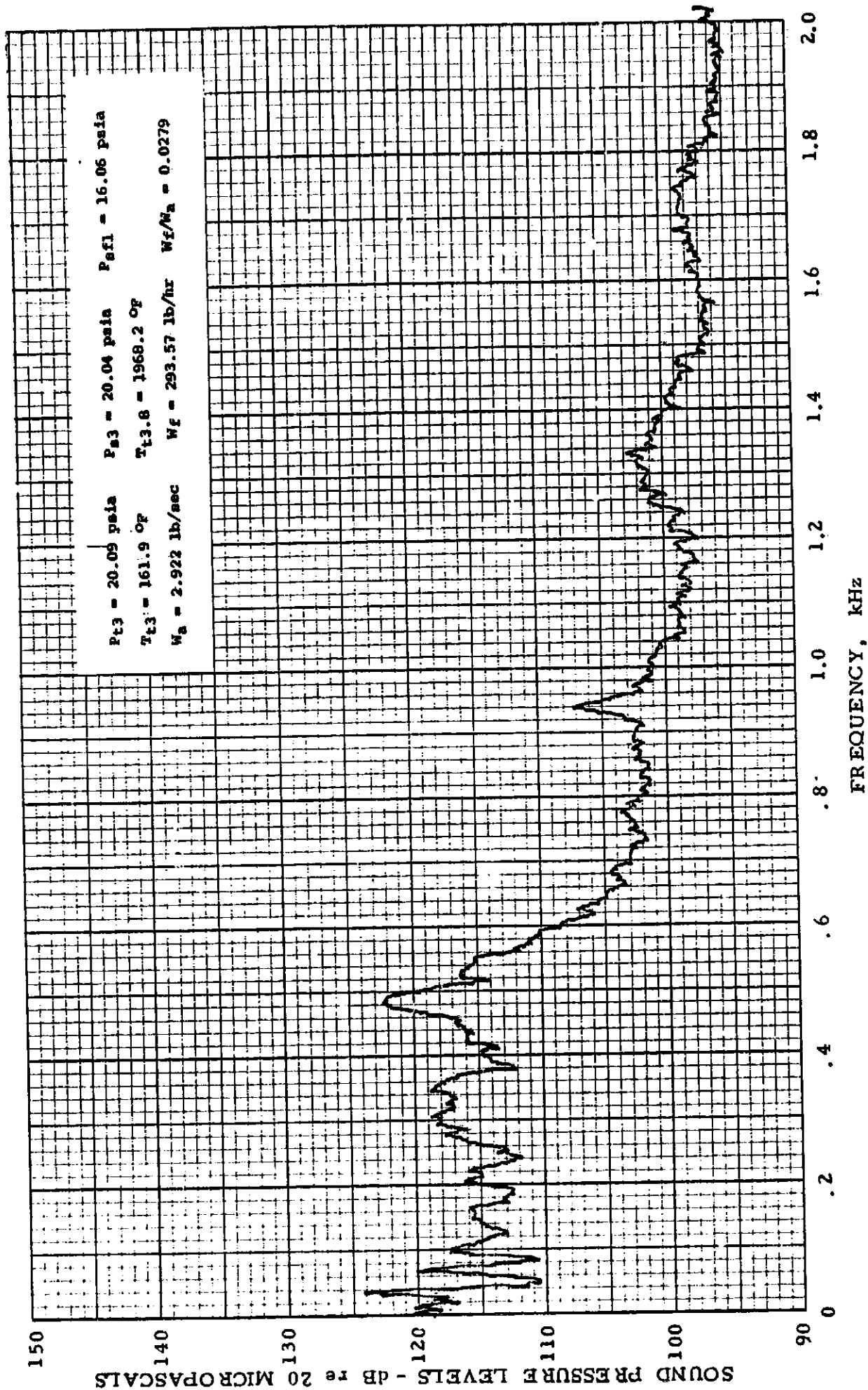
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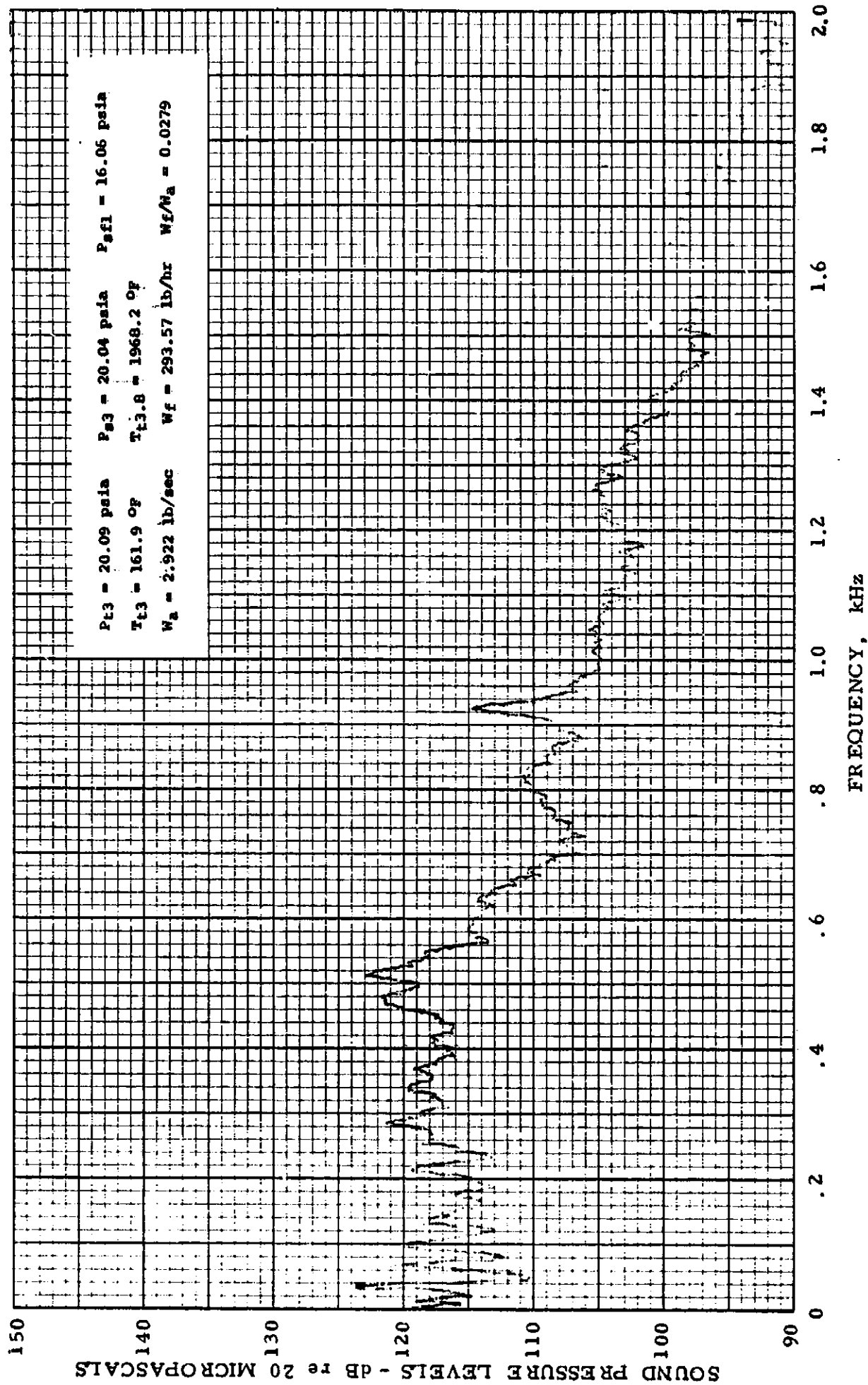
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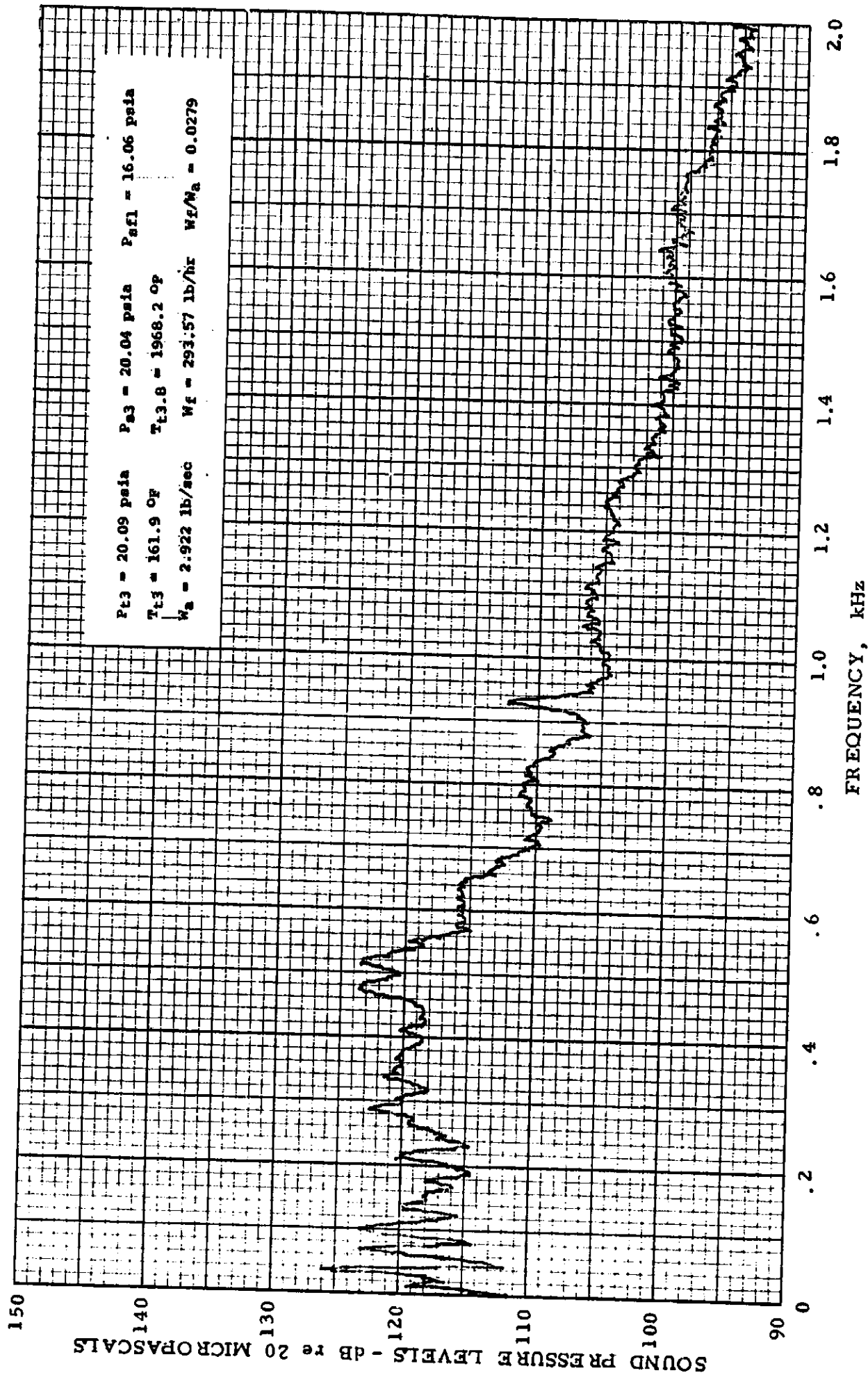
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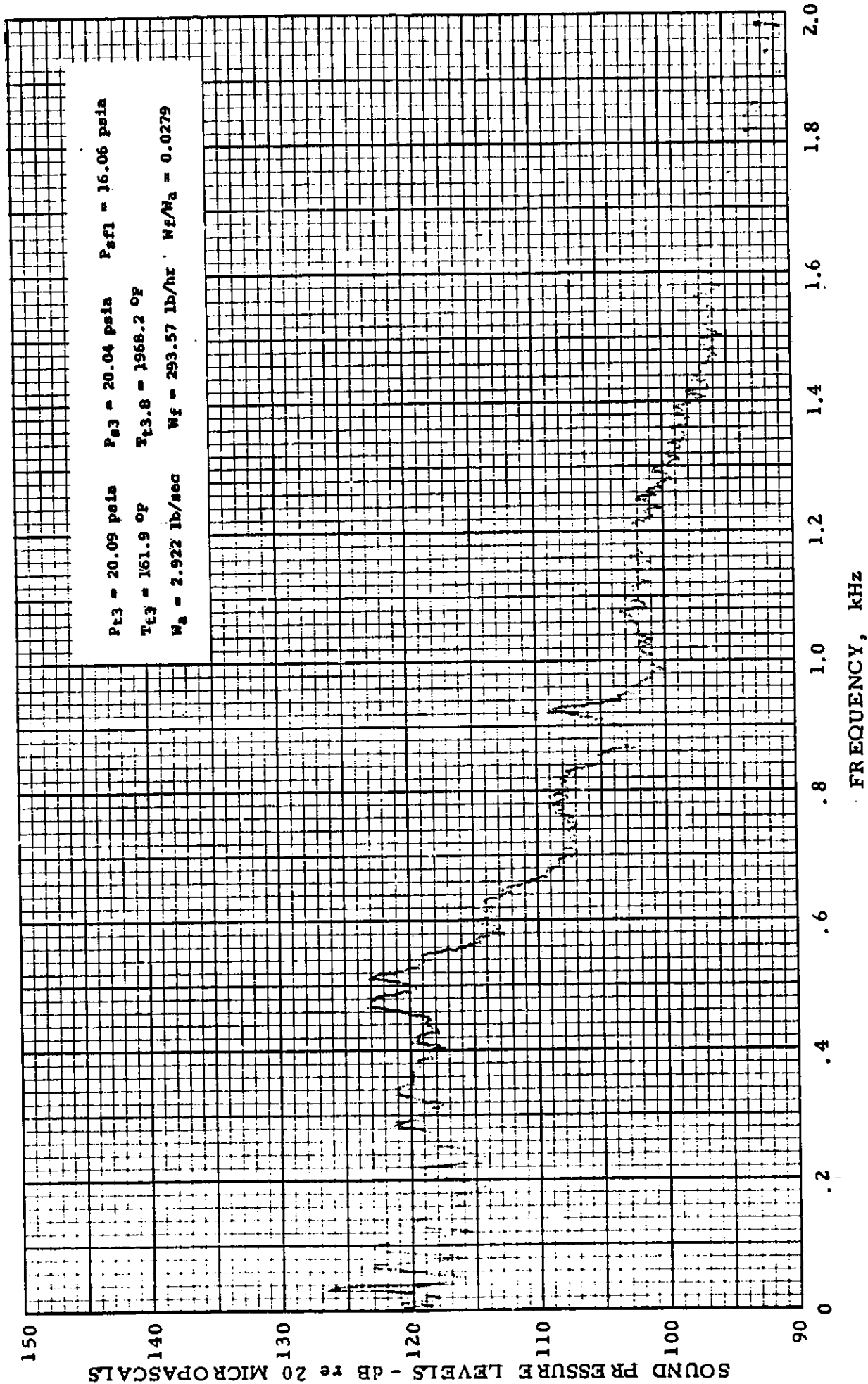
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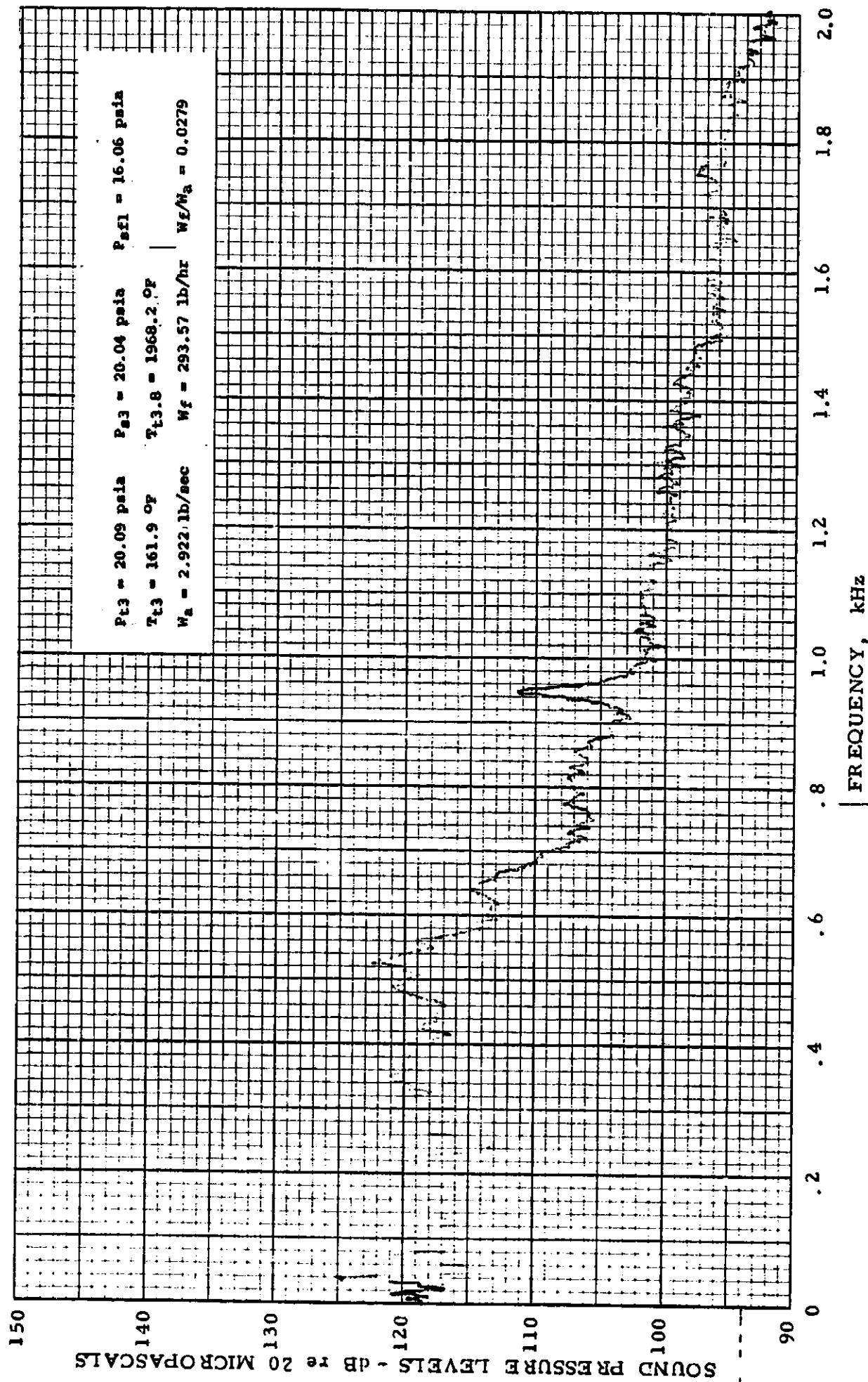
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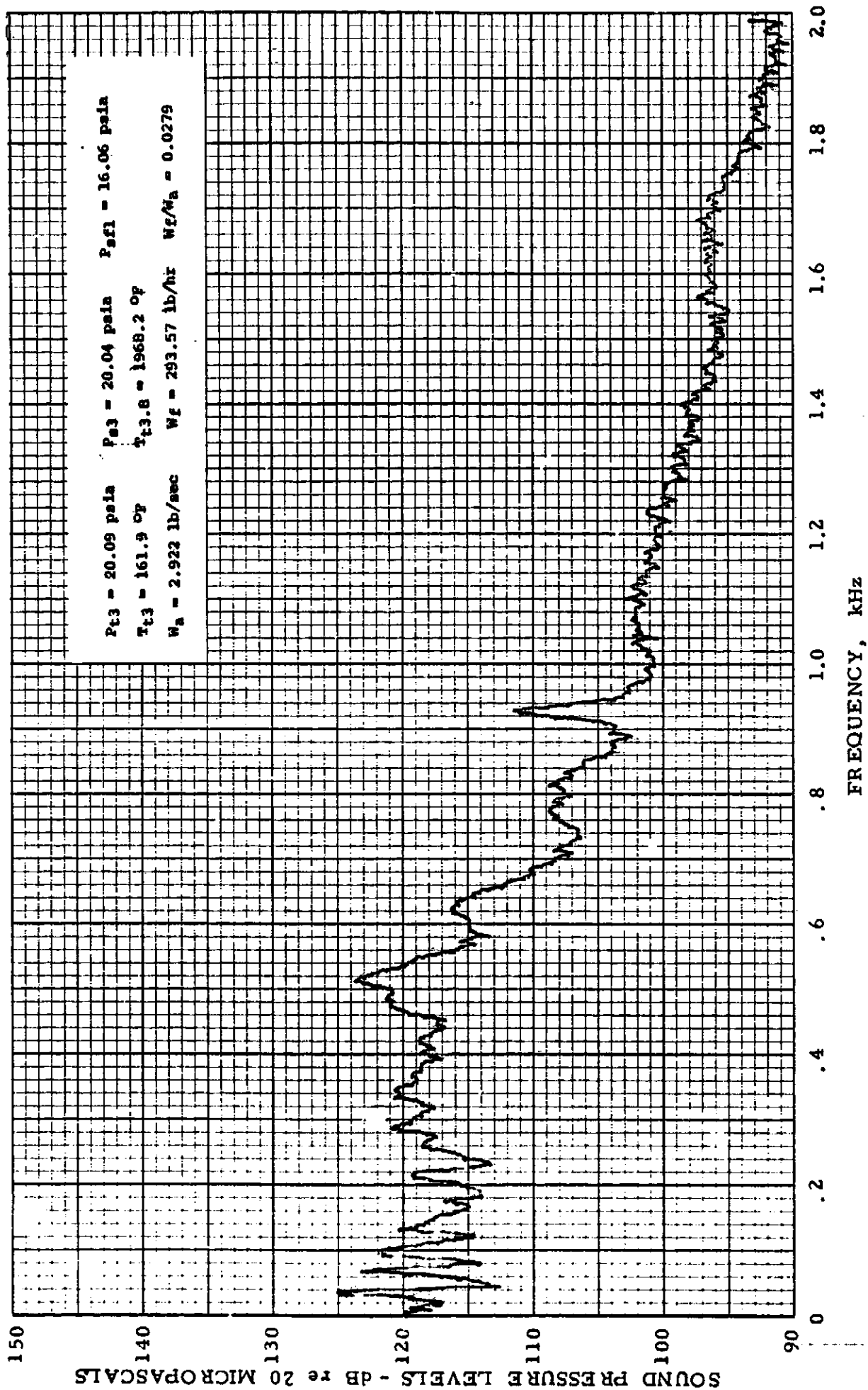
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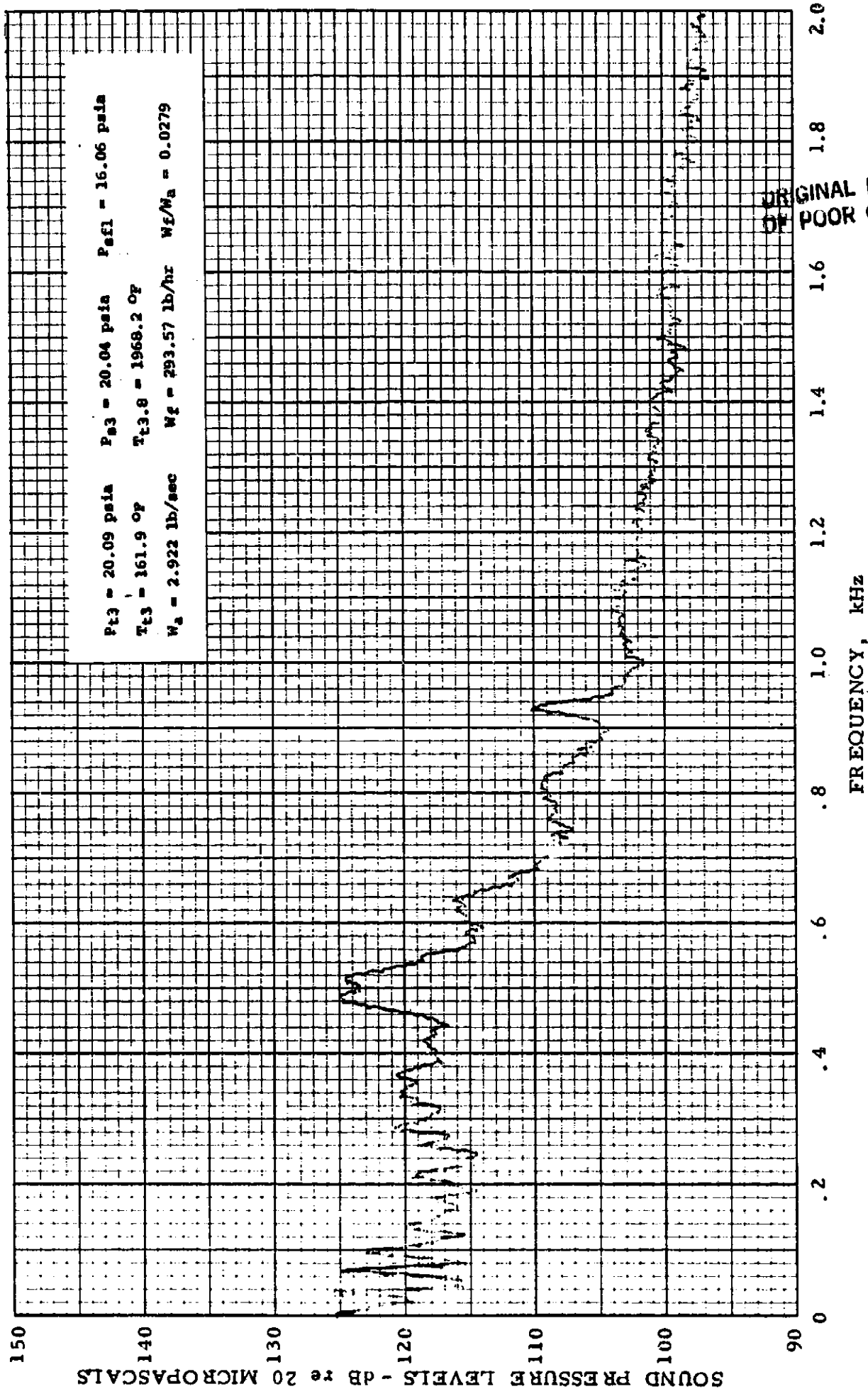
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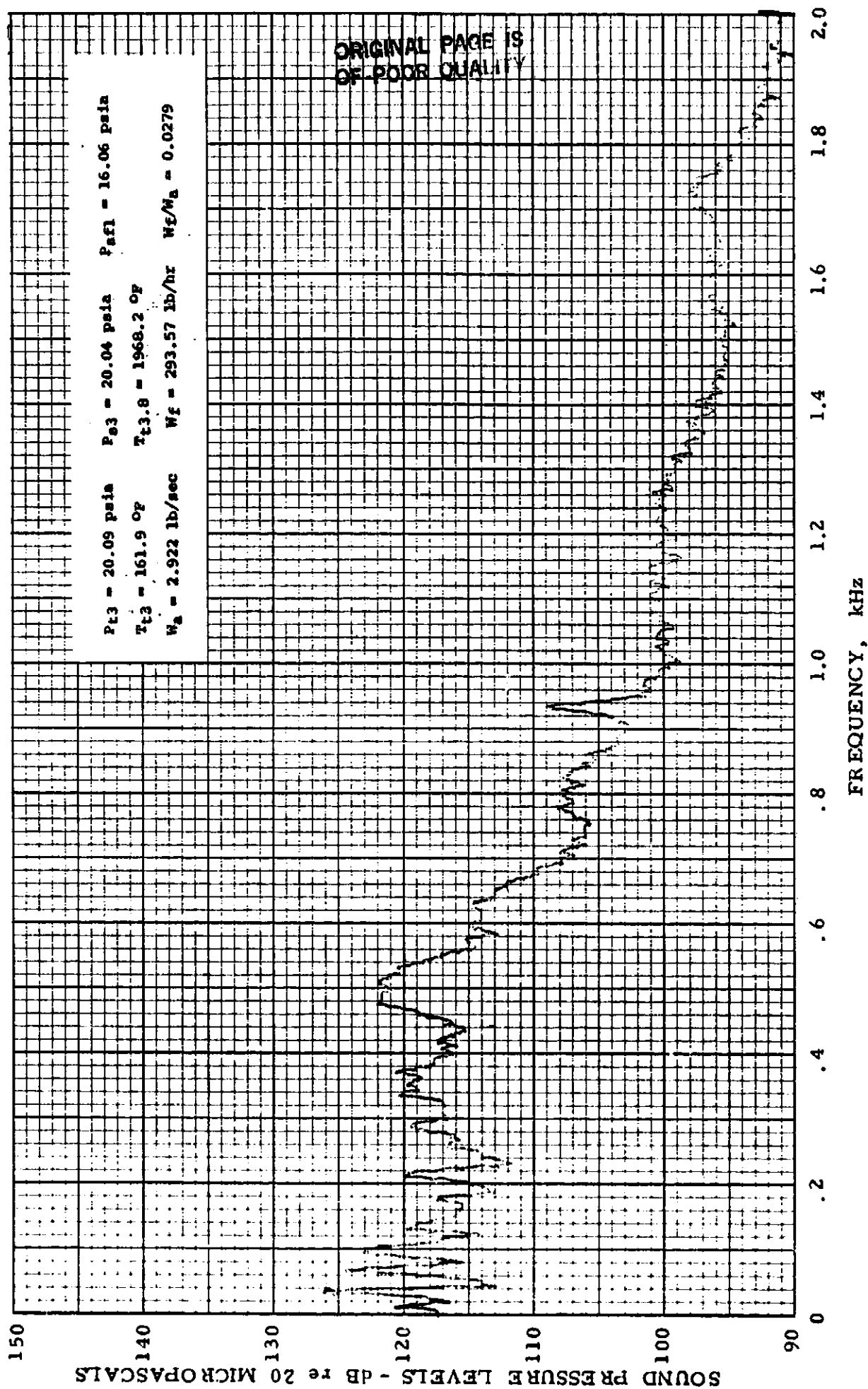


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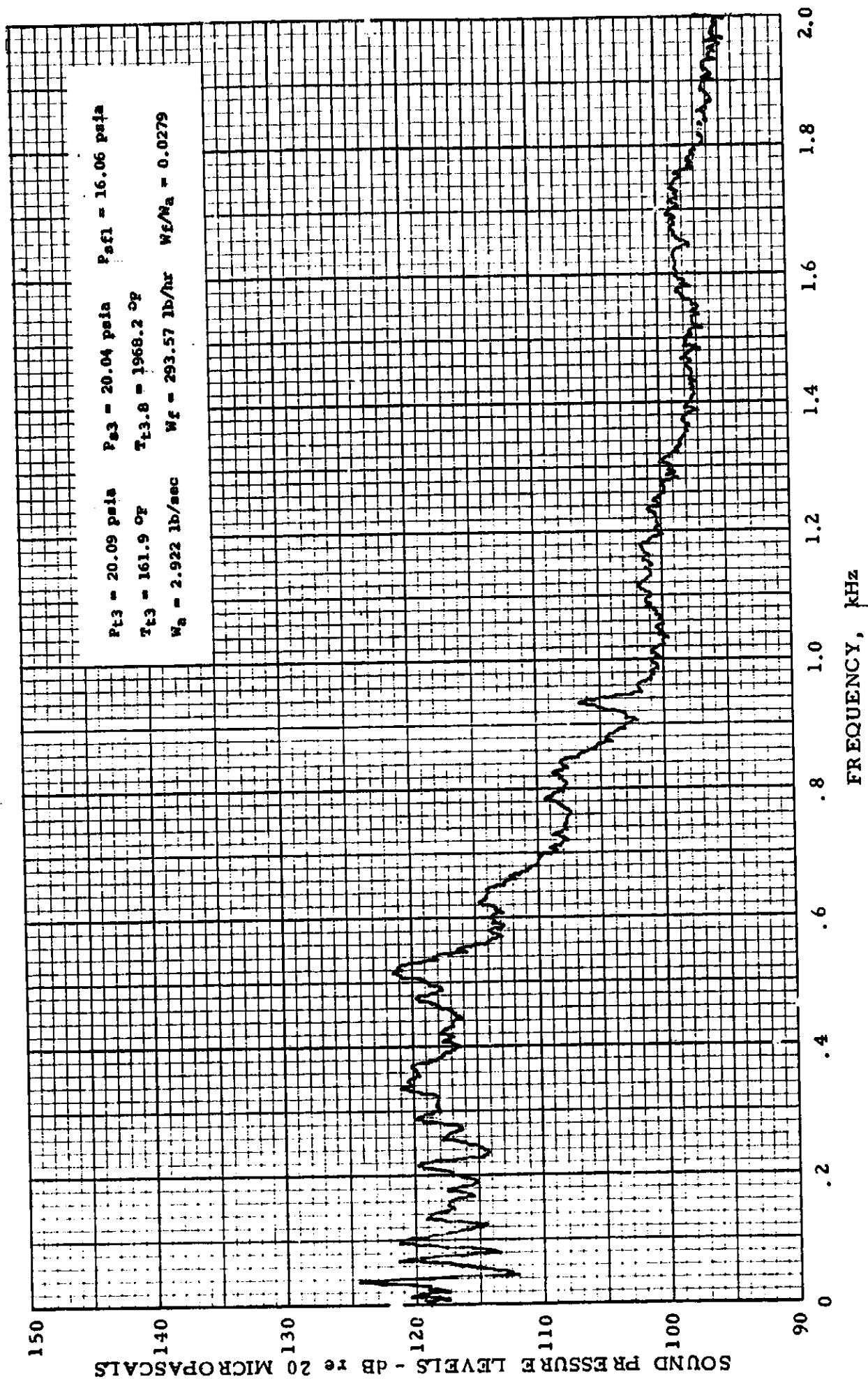


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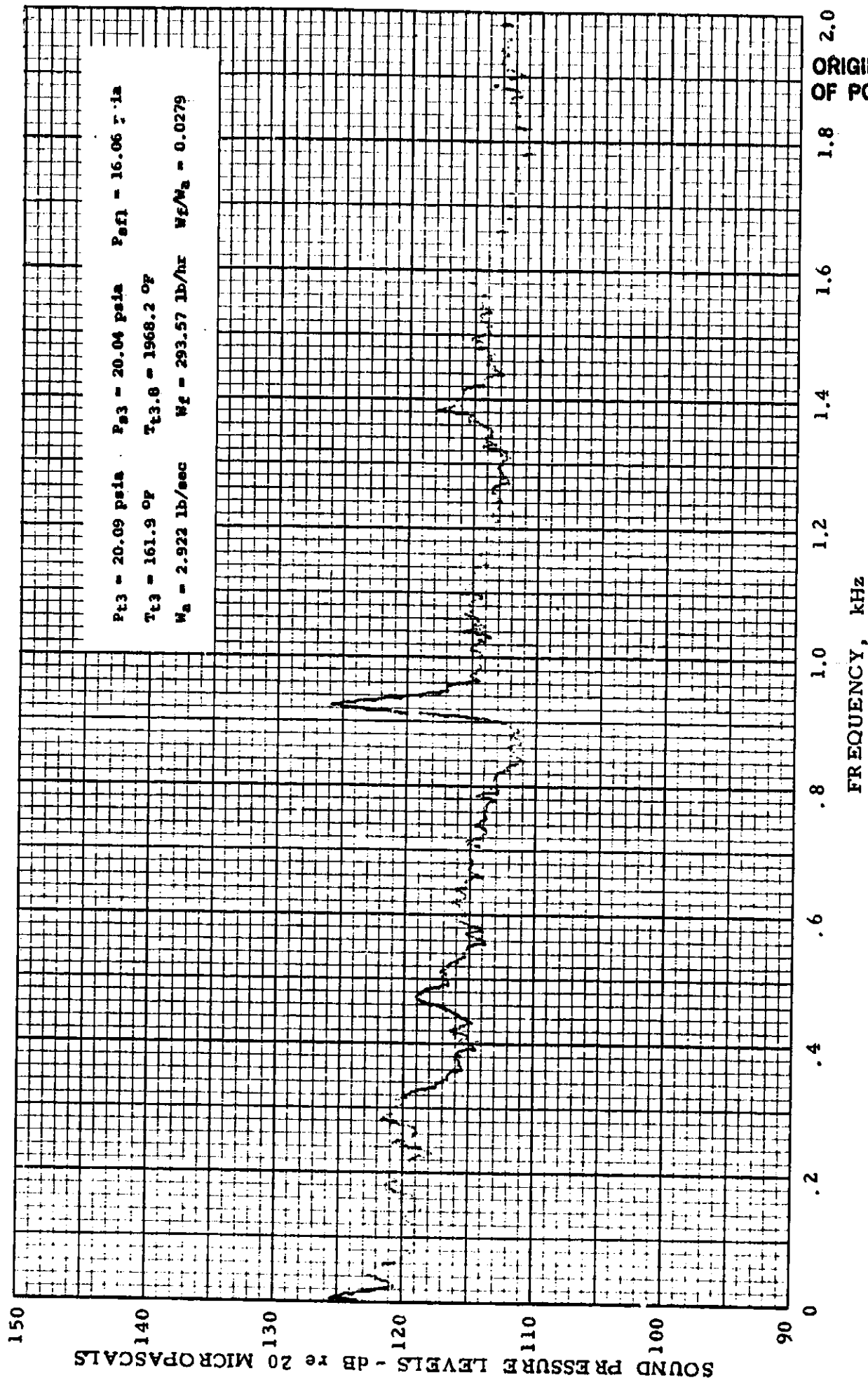
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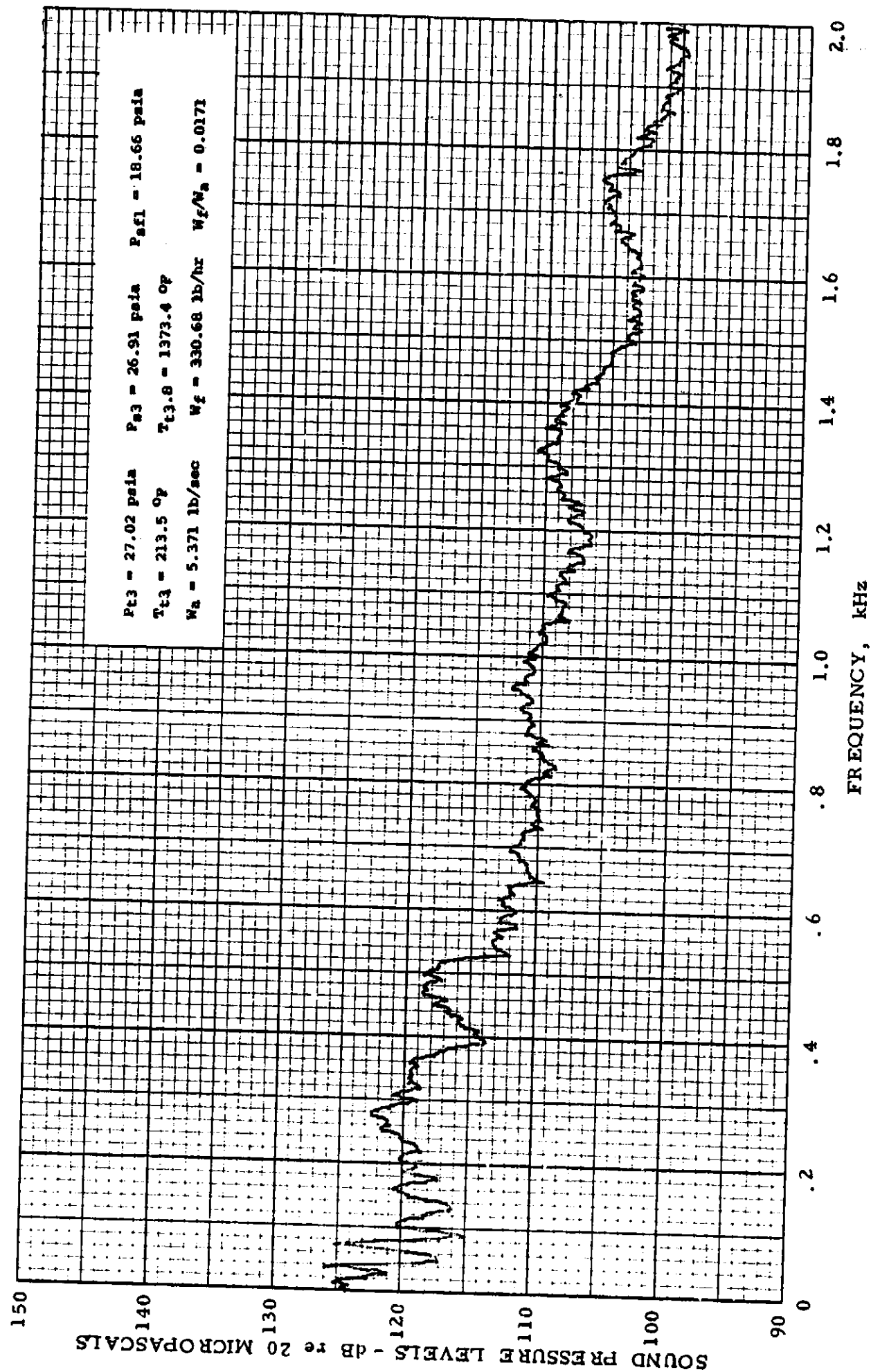


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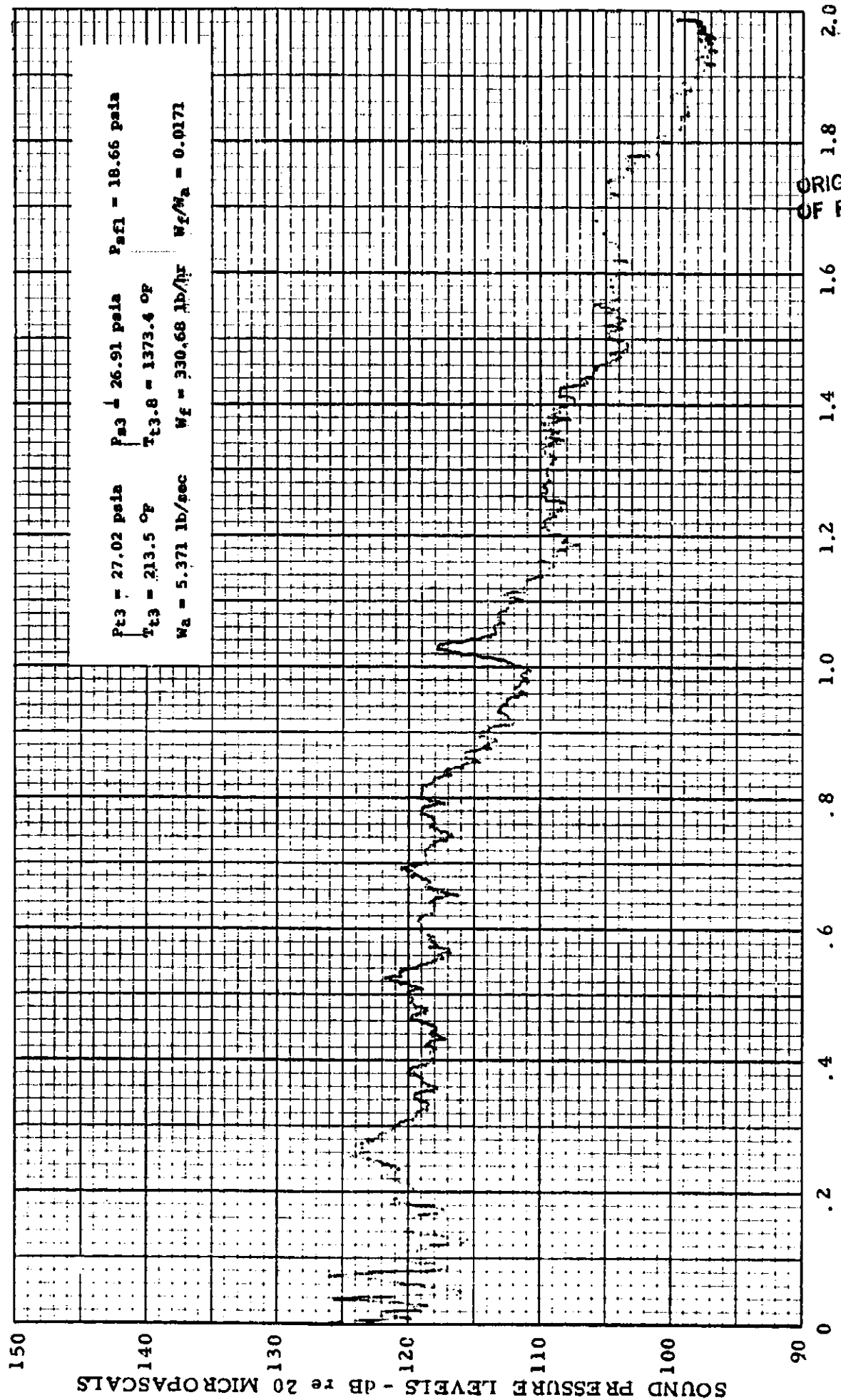


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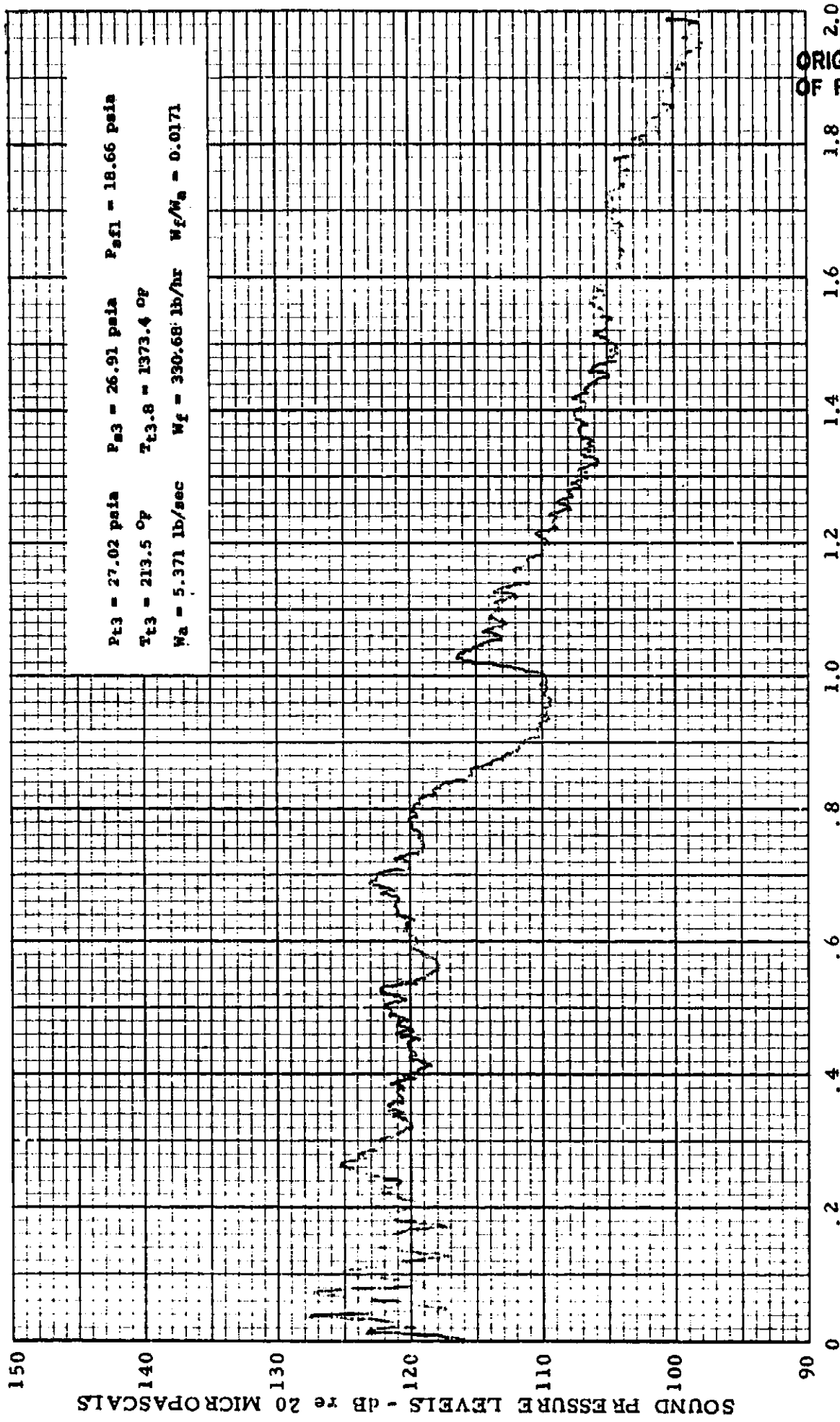


NARROW BAND SPECTRUM AT PROBE NUMBER 1 DURING RUN POINT NUMBER 133



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NARROW BAND SPECTRUM AT PROBE NUMBER 2 DURING RUN POINT NUMBER 133



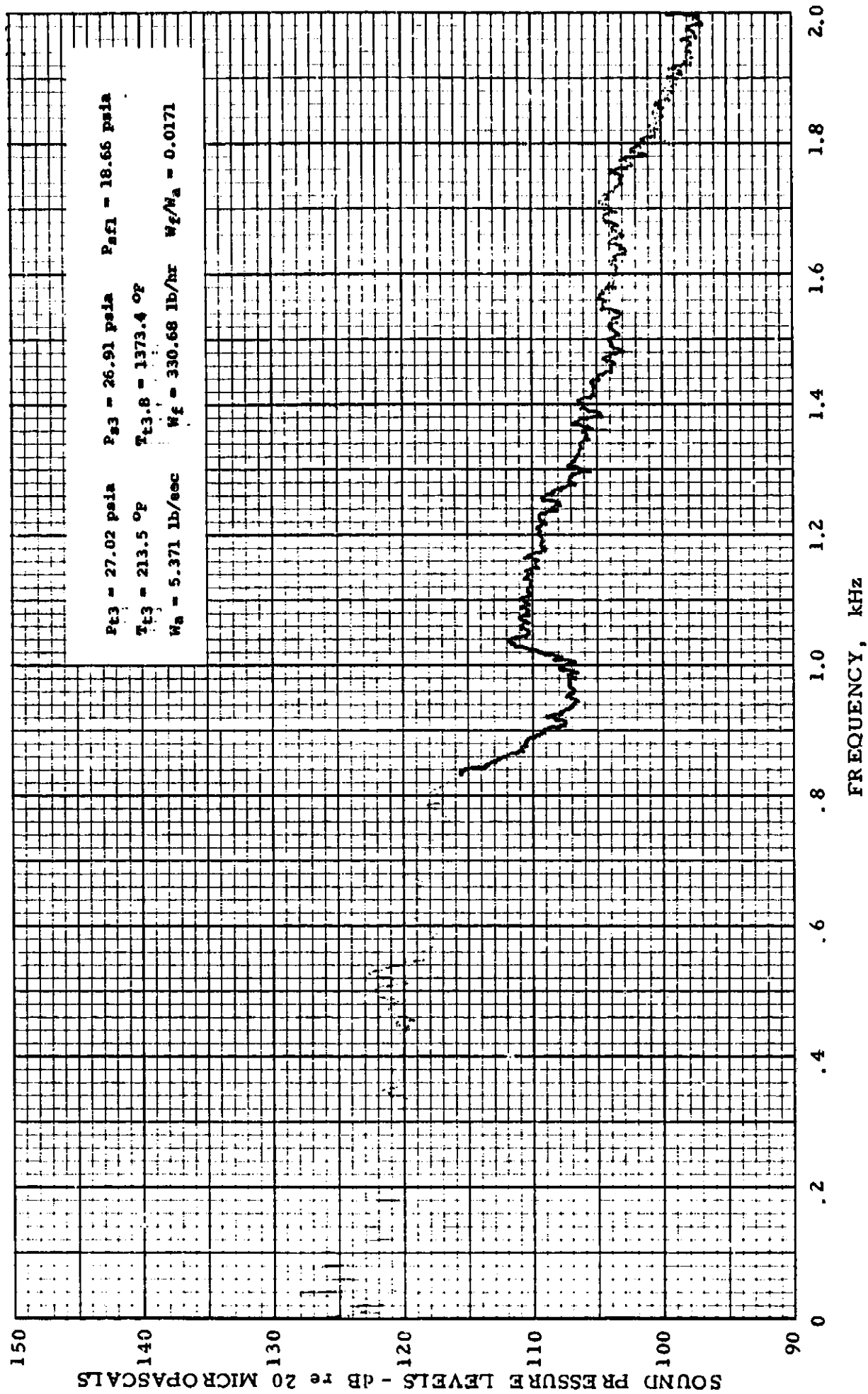
SOUND PRESSURE LEVELS - dB re 20 MICROPASCALS

FREQUENCY, kHz

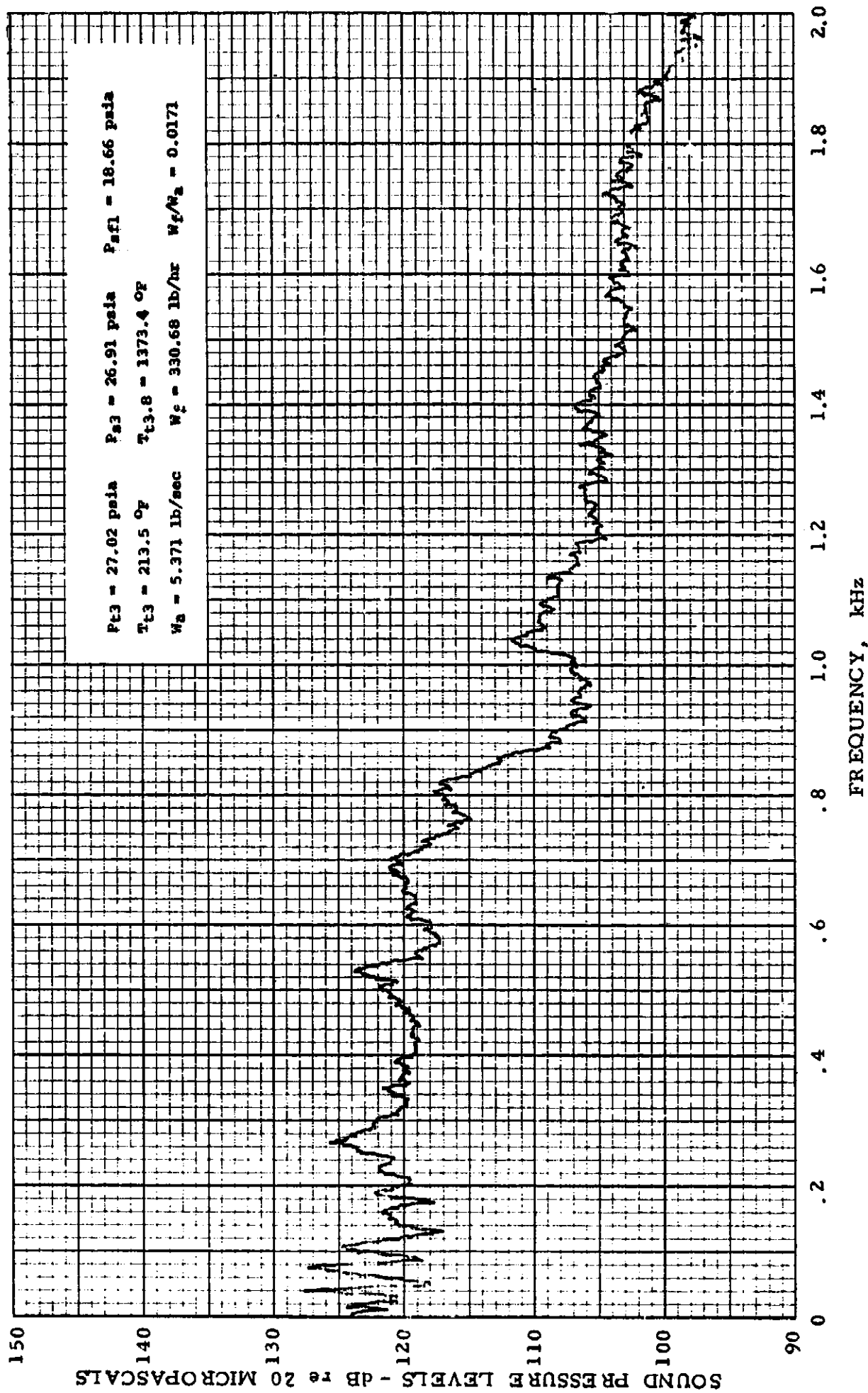
$P_{t3} = 27.02 \text{ psia}$ $P_{s3} = 26.91 \text{ psia}$ $P_{sfl} = 18.66 \text{ psia}$
 $T_{t3} = 213.5 \text{ }^\circ\text{F}$ $T_{t3.8} = 1373.4 \text{ }^\circ\text{F}$
 $W_a = 5.371 \text{ lb/sec}$ $W_f = 330.68 \text{ lb/hr}$ $W_f/W_a = 0.0171$

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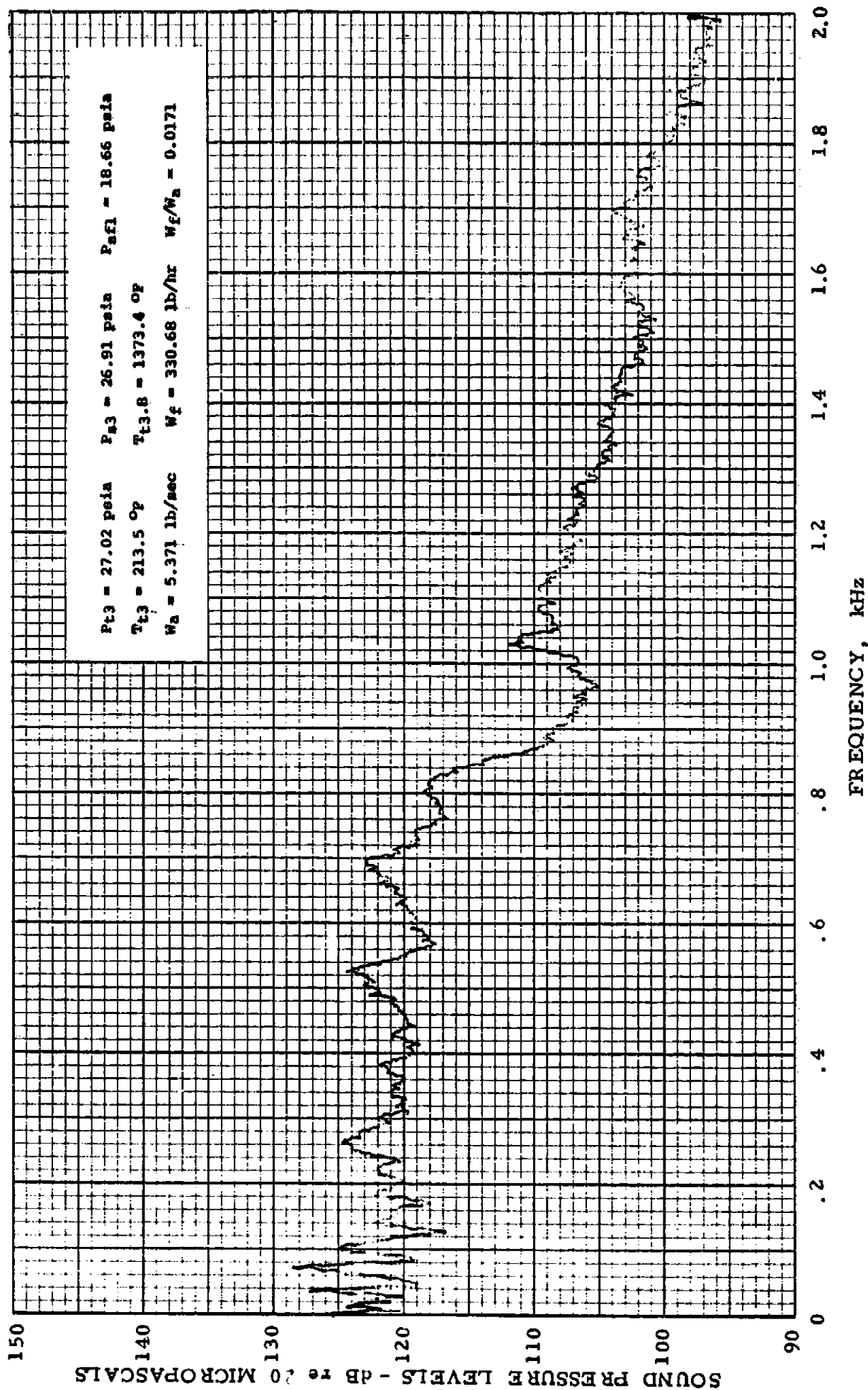
RUNNING BAND SPECTRUM AT PROBE NUMBER 3 DURING RUN POINT NUMBER 133



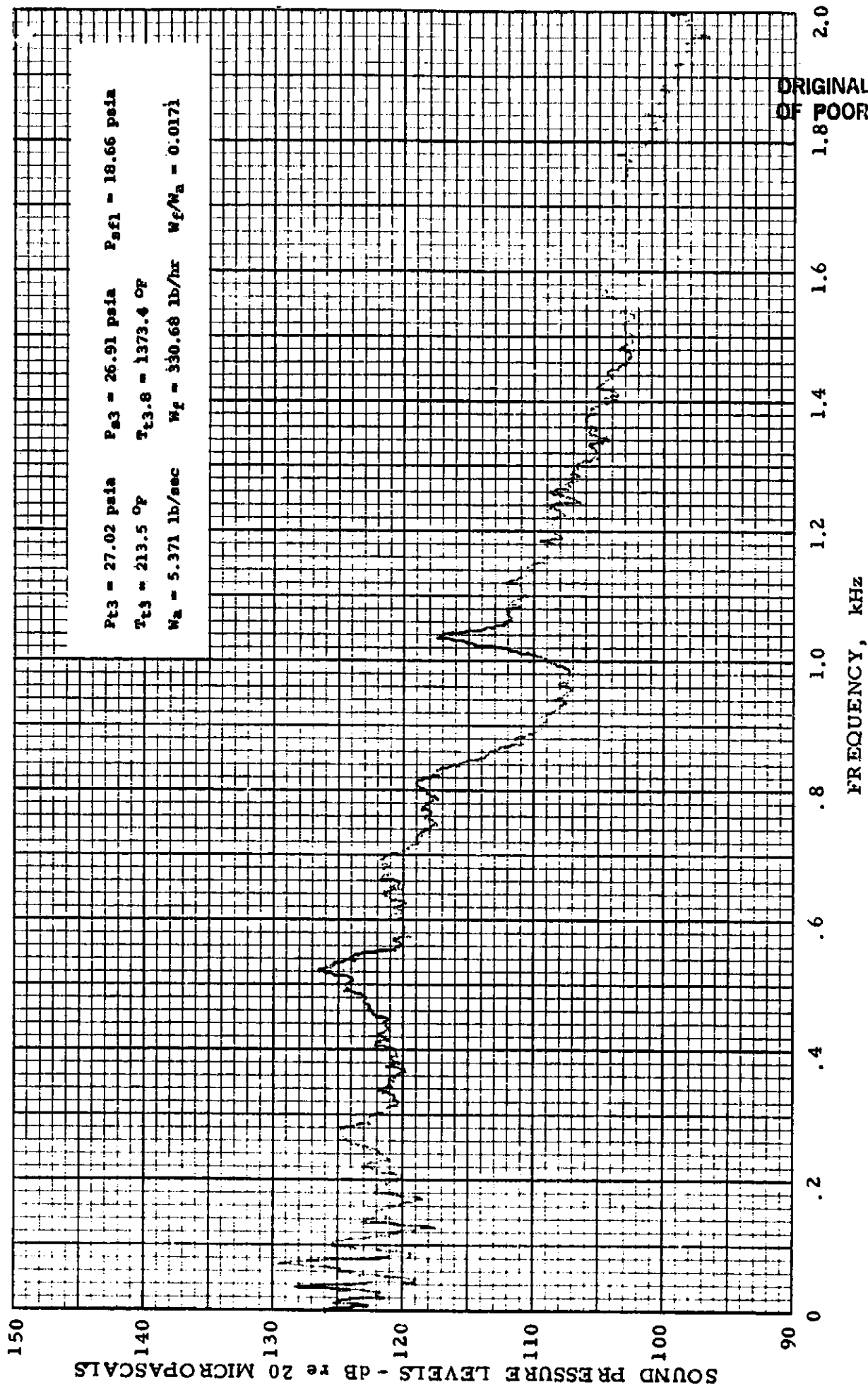
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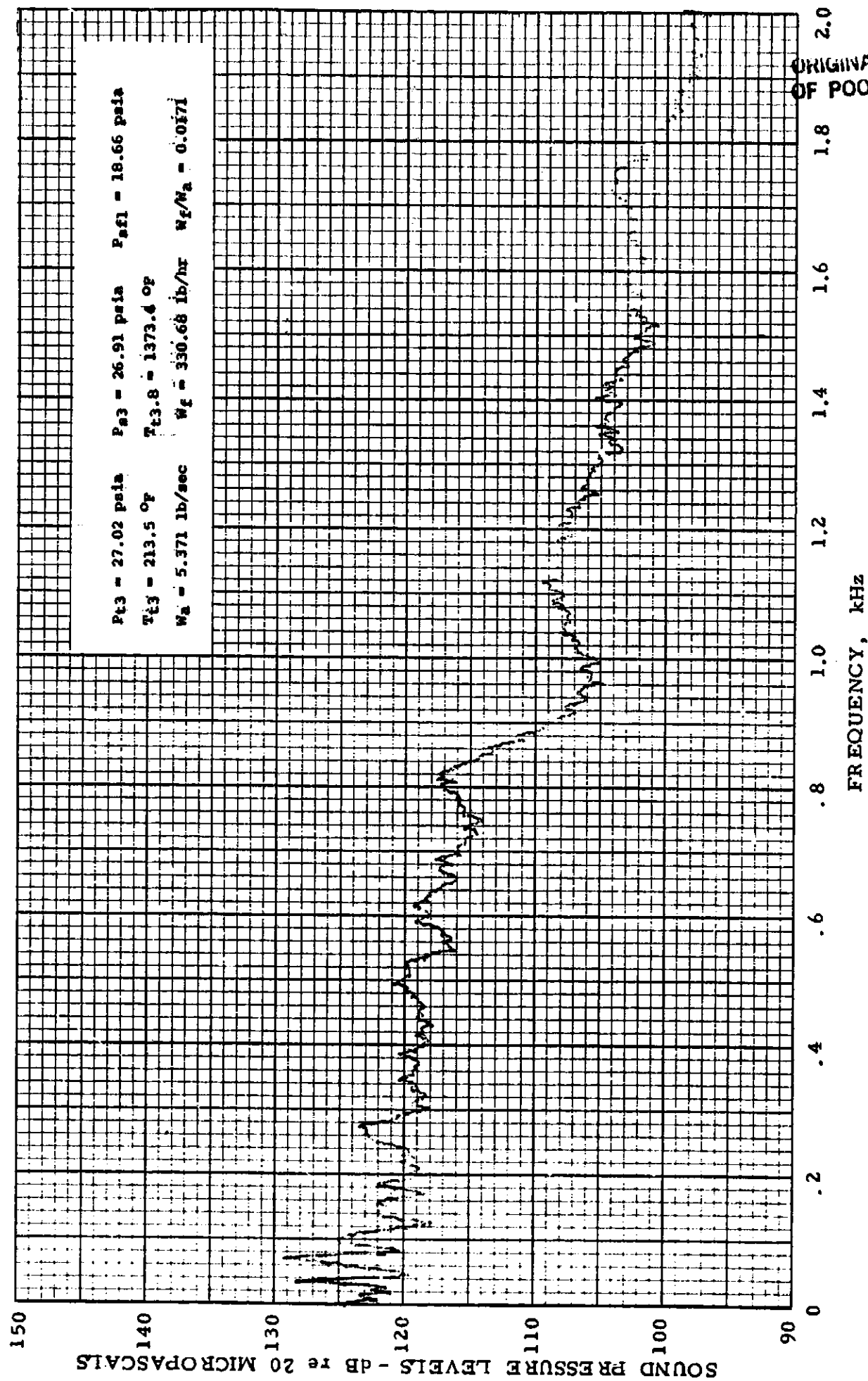


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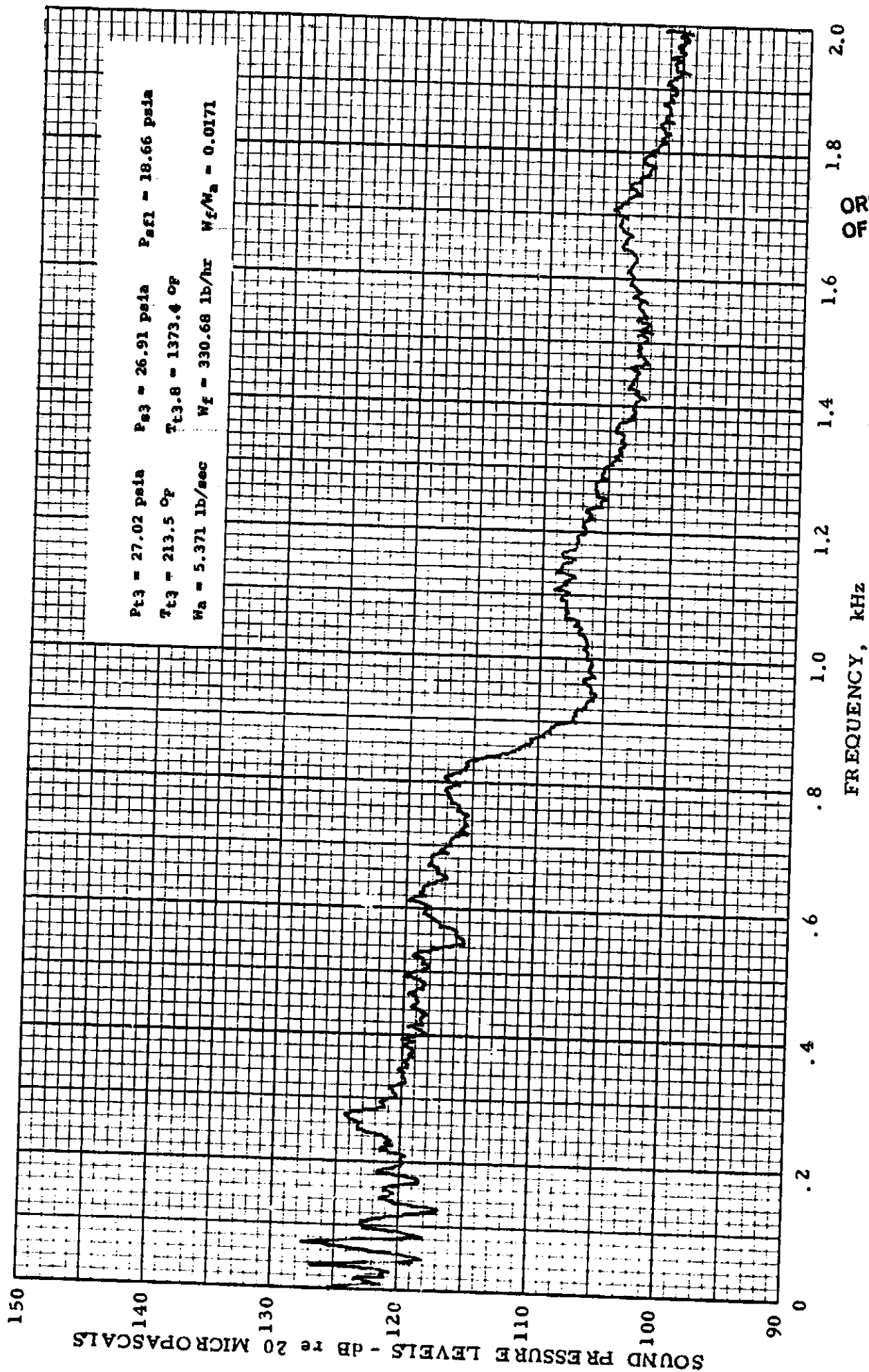
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NARROW BAND SPECTRUM AT PROBE NUMBER 7 DURING RUN POINT NUMBER 133



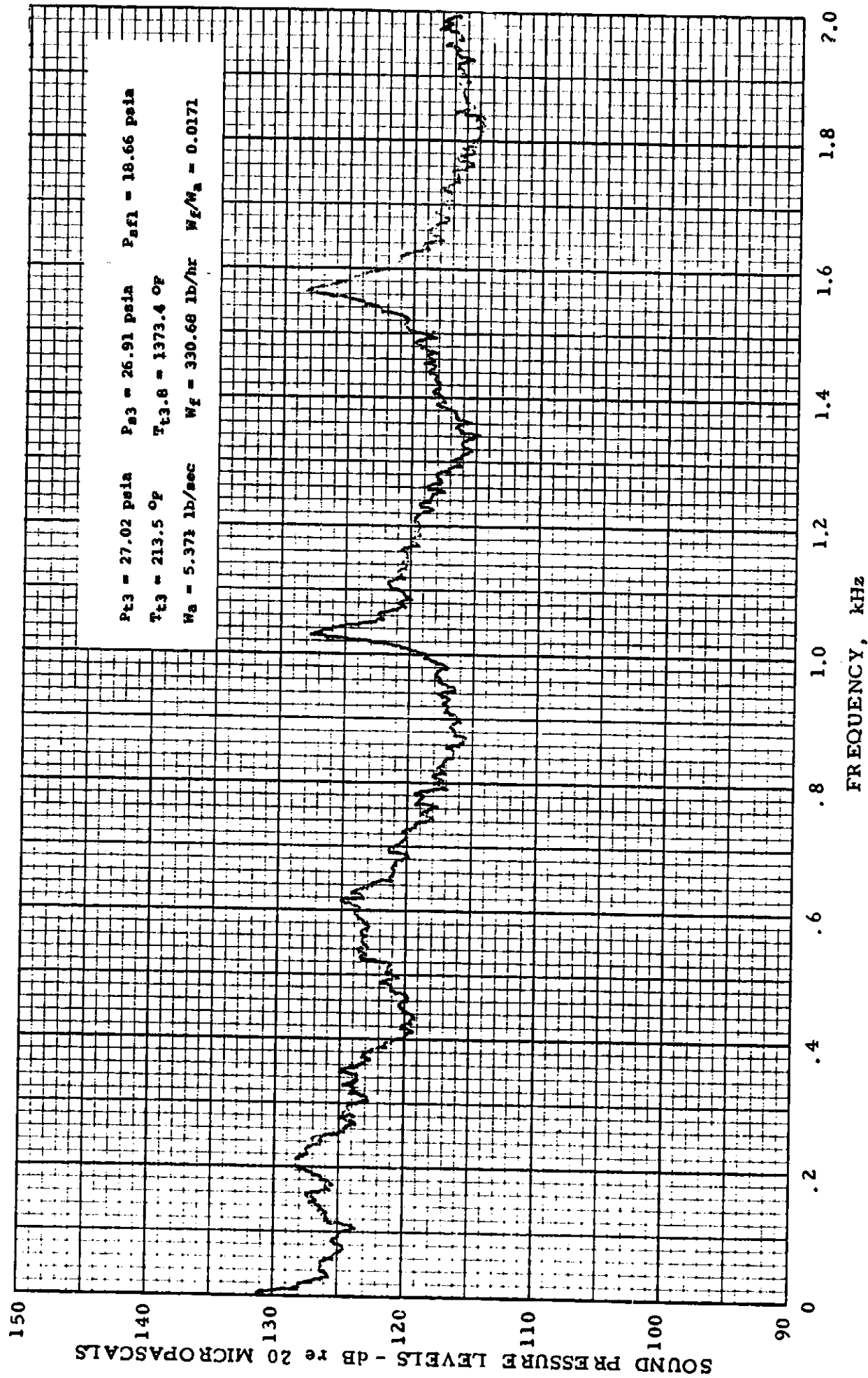
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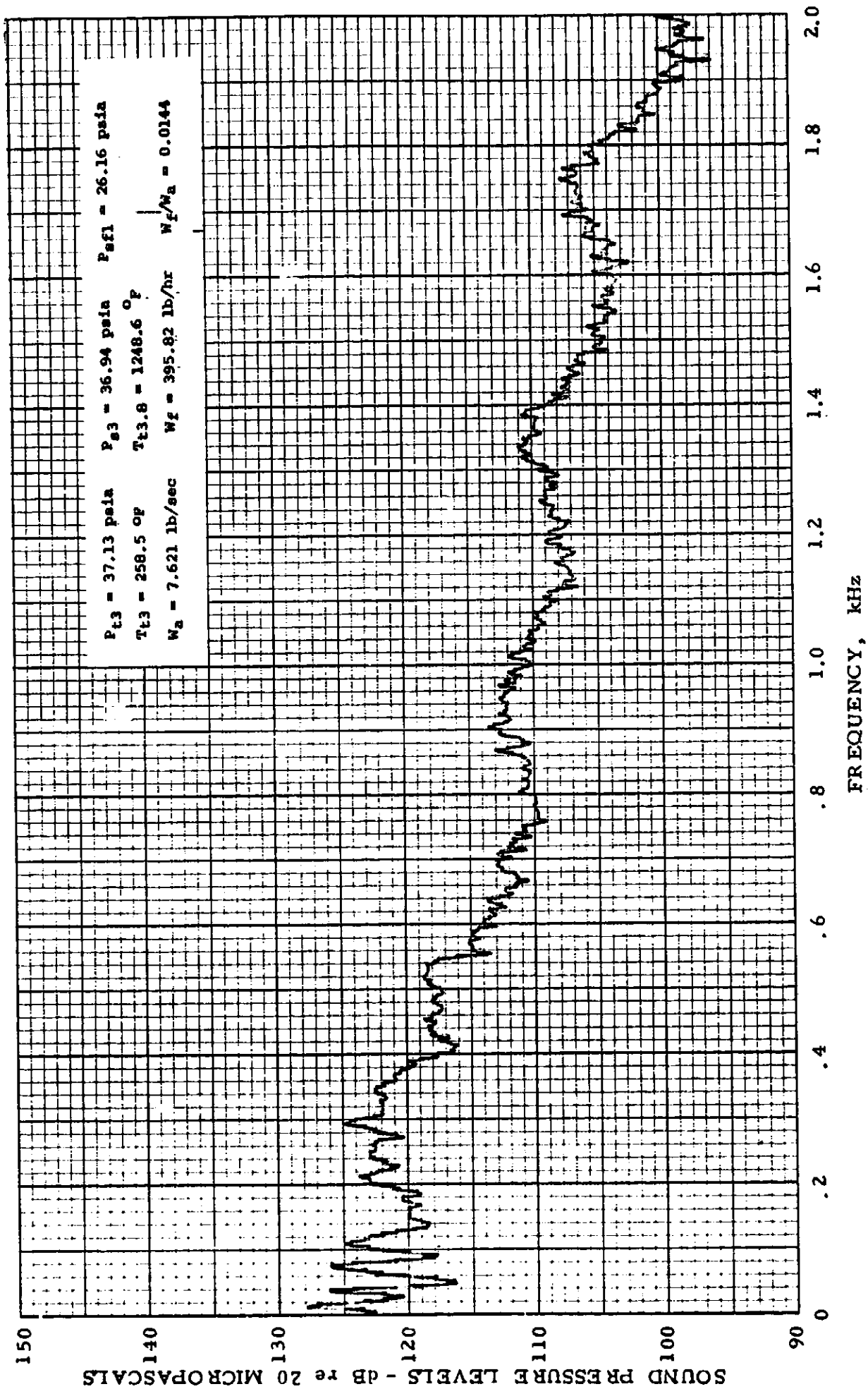


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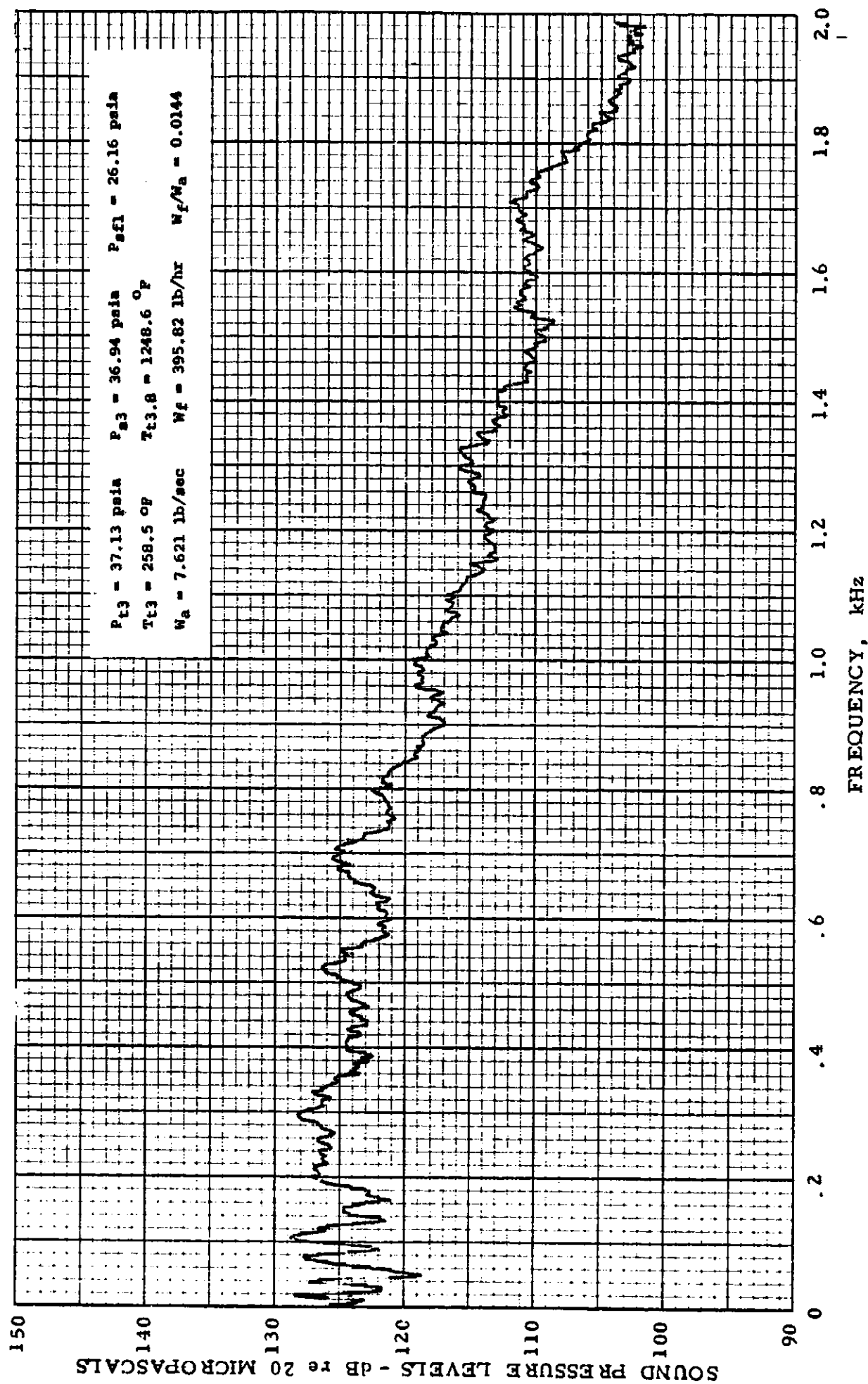
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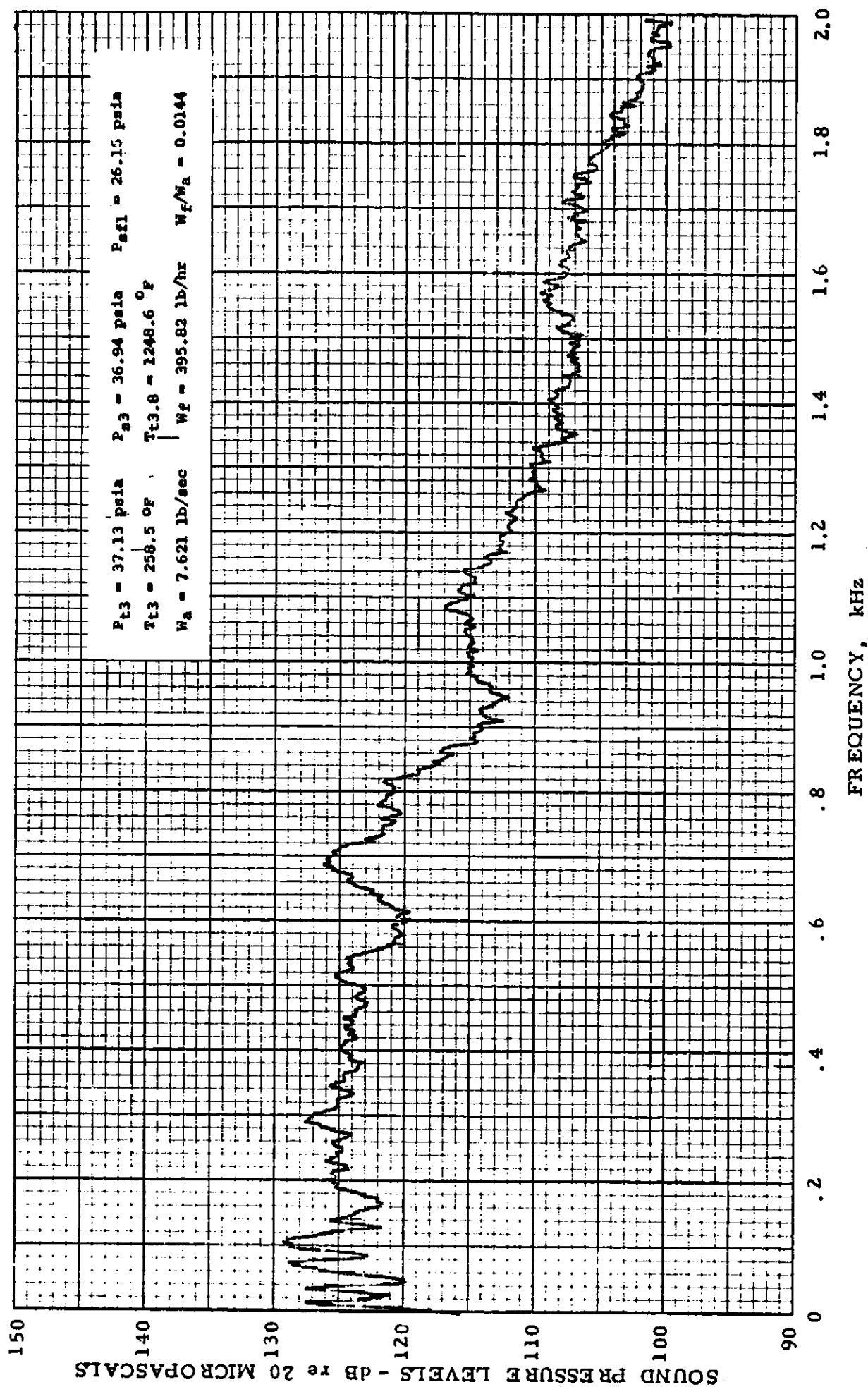
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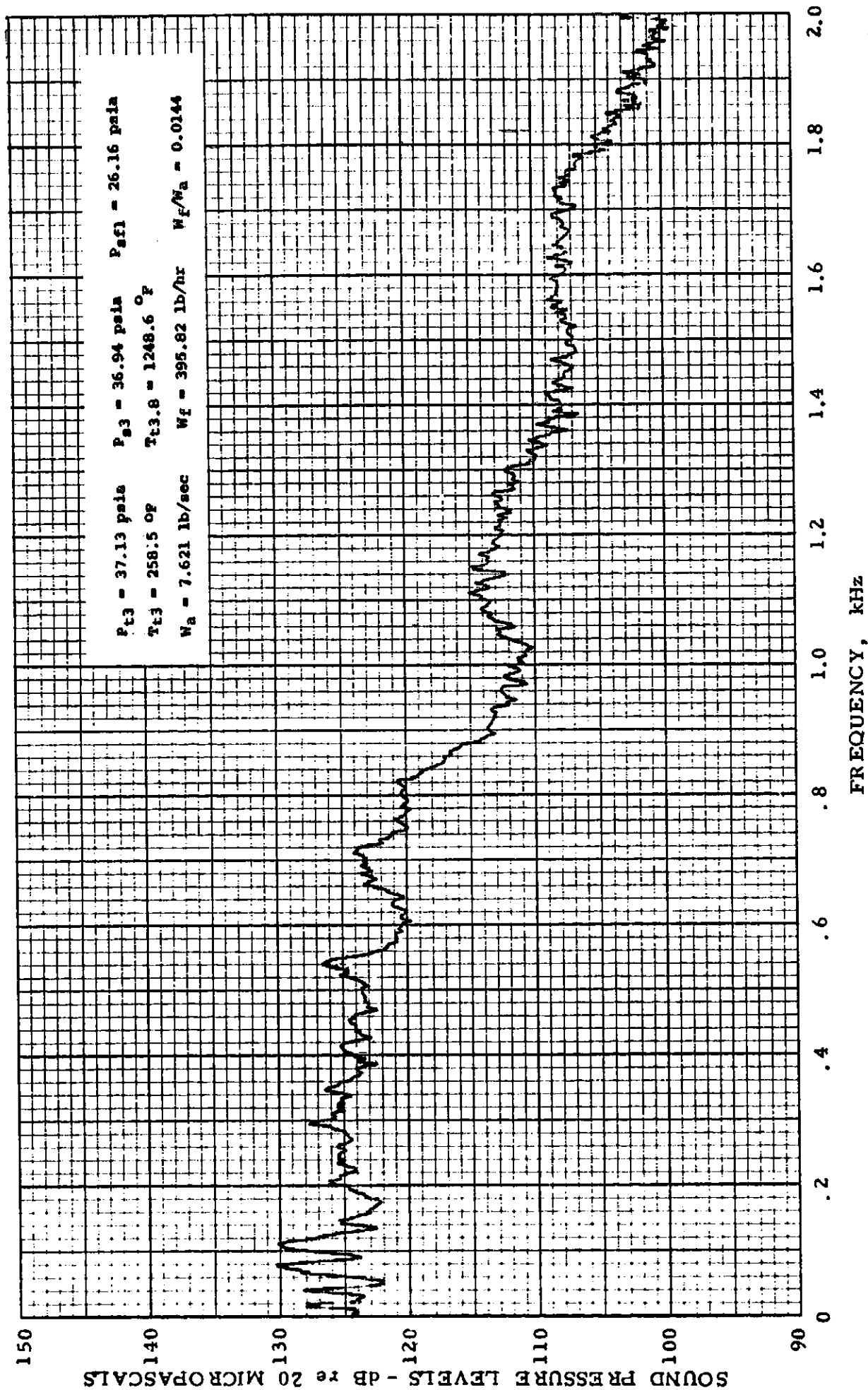
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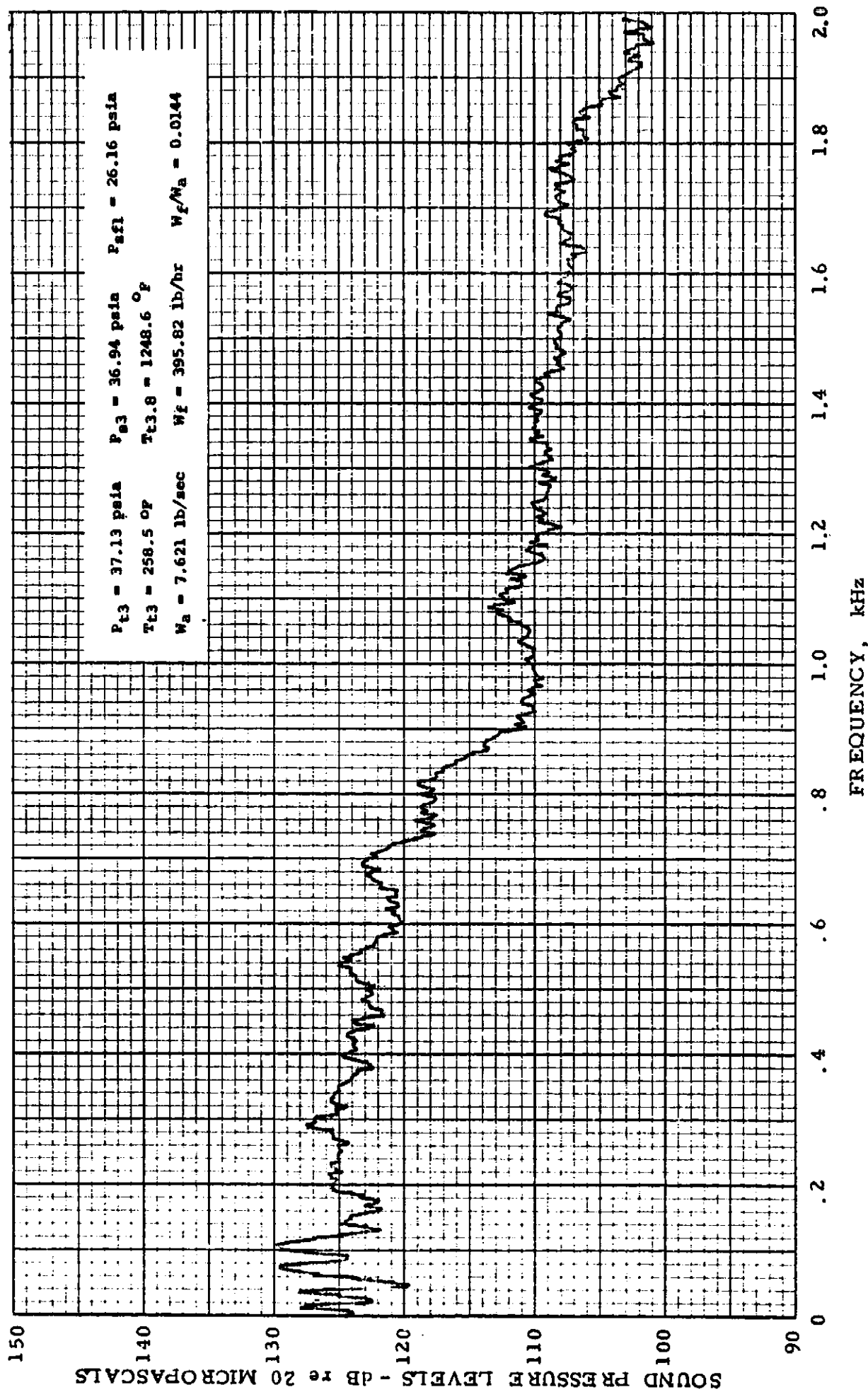
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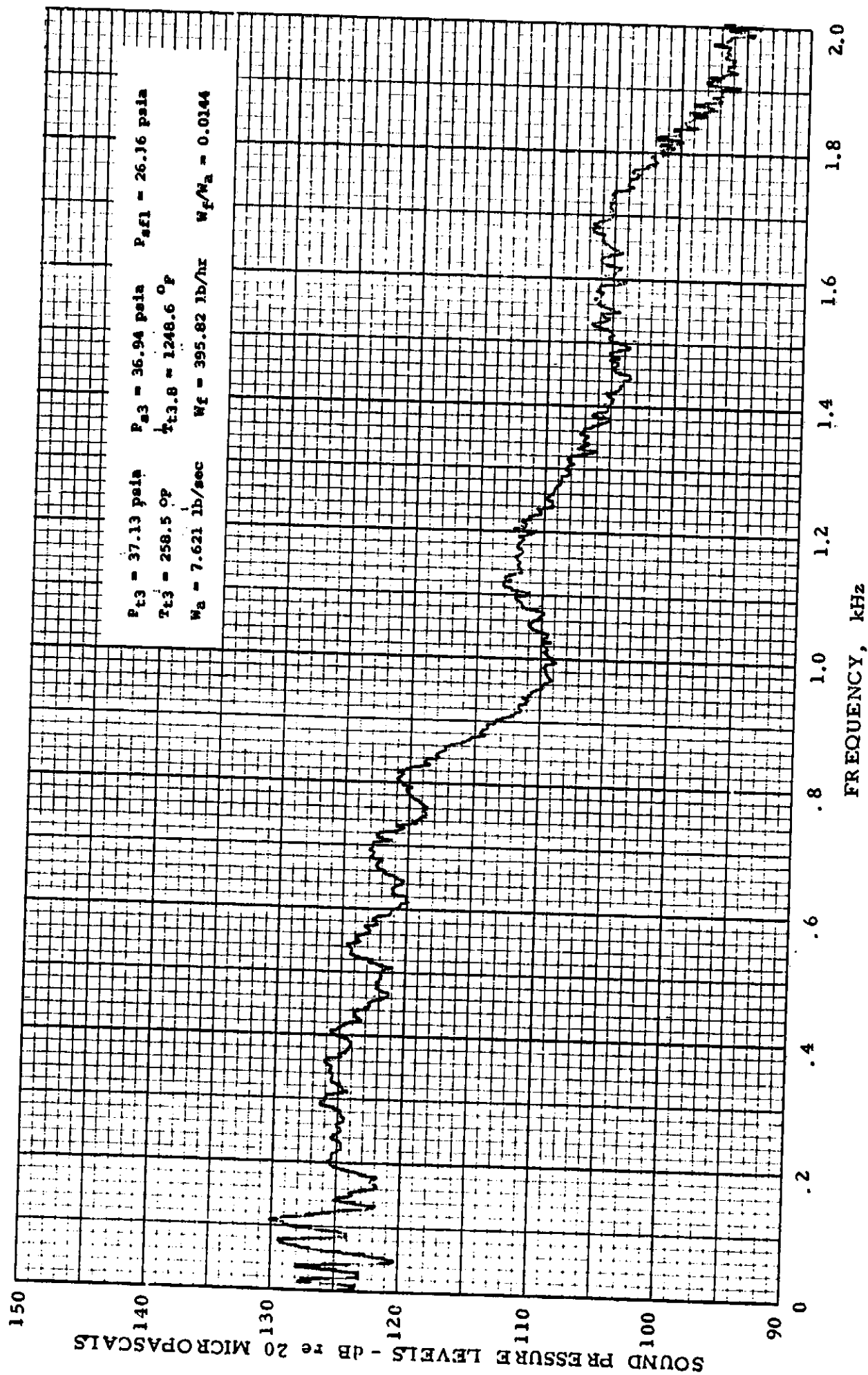
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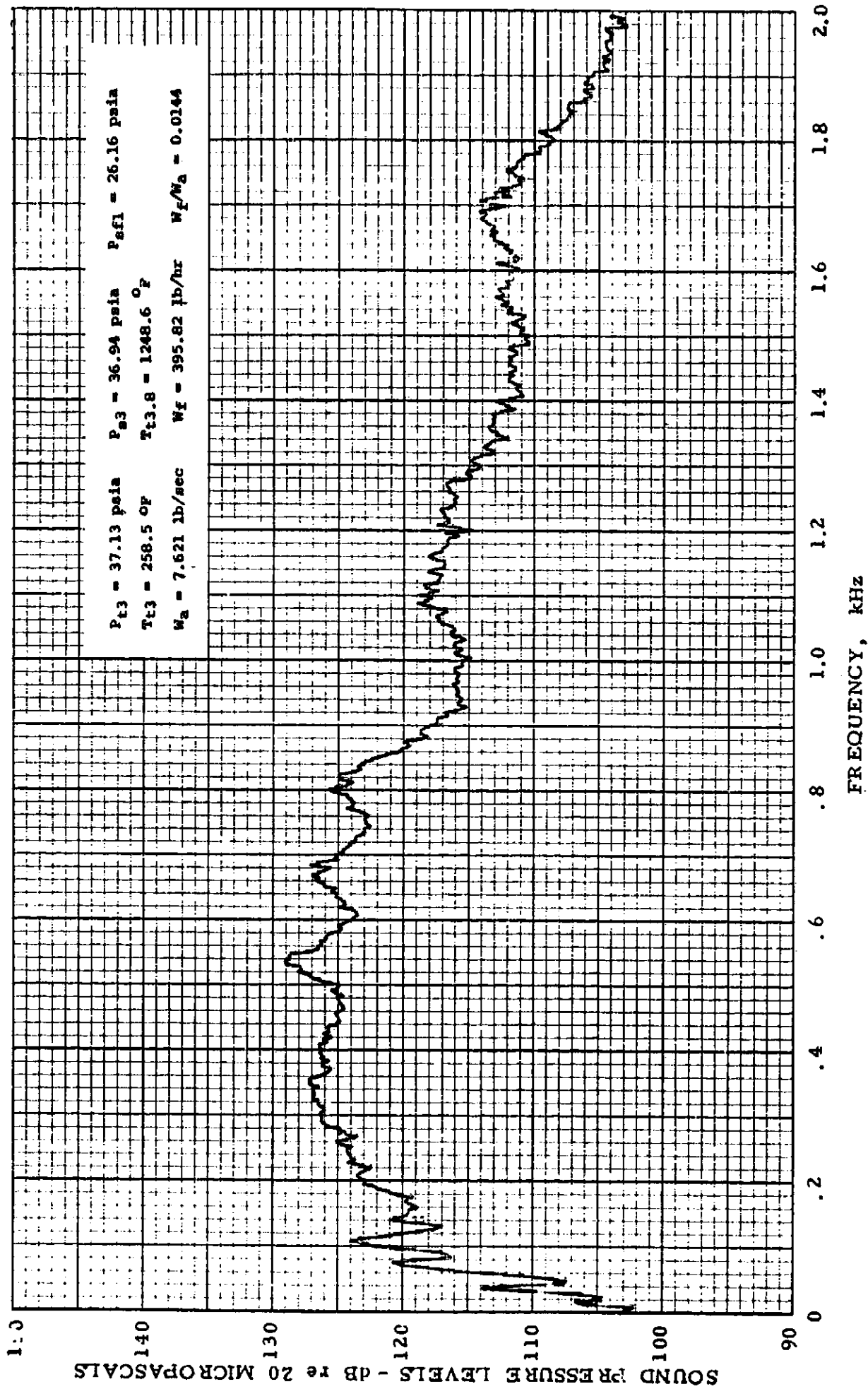
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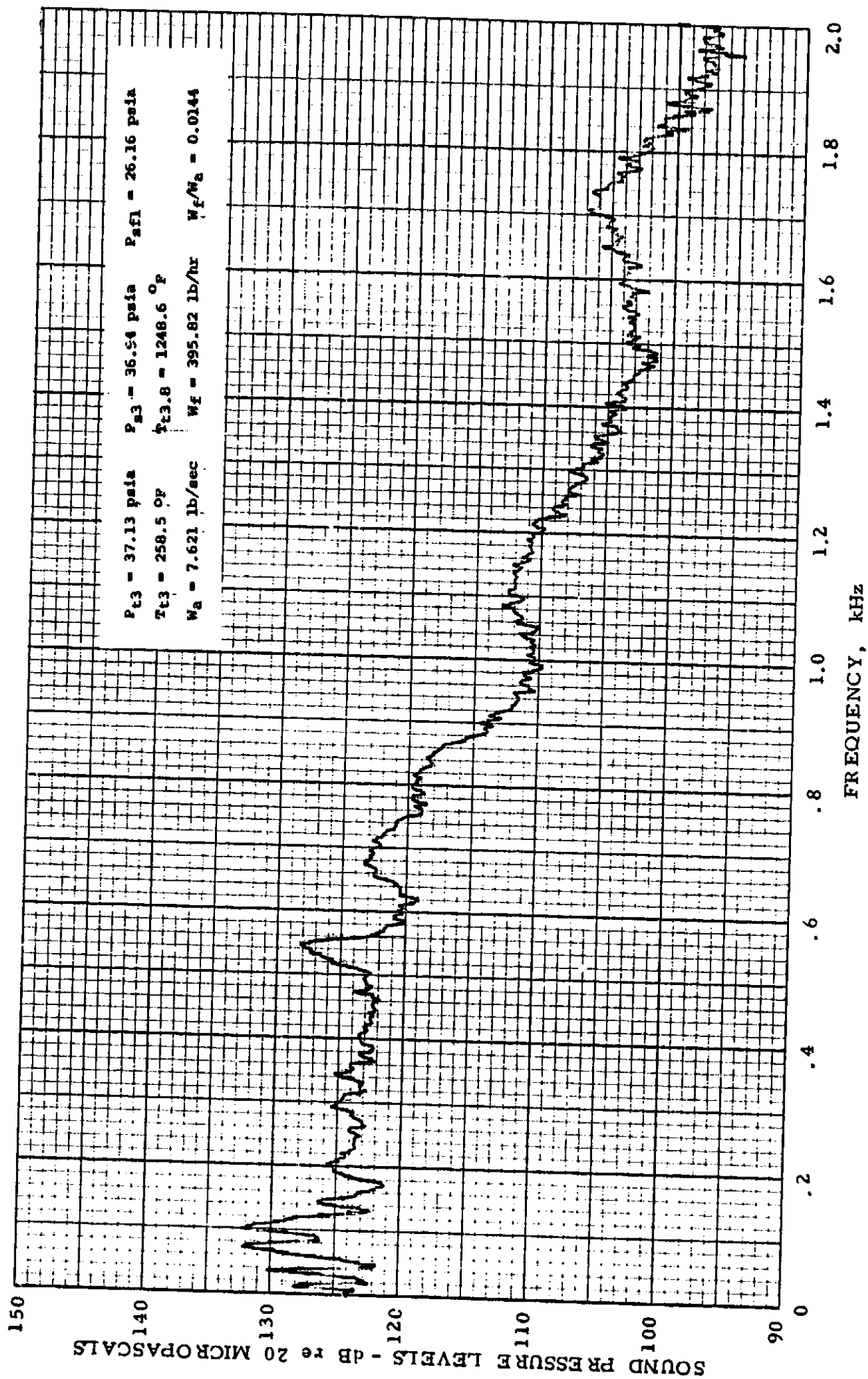
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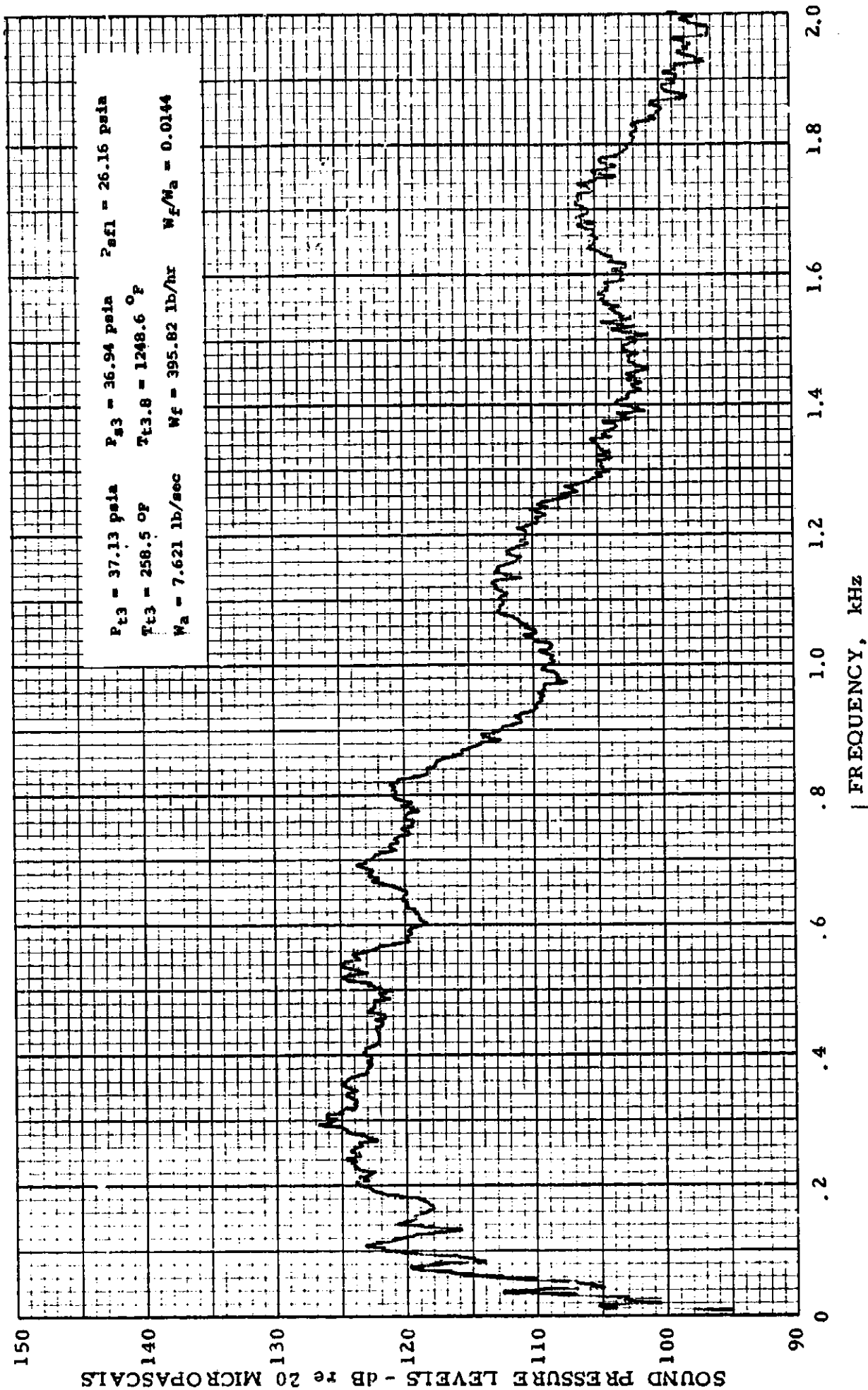
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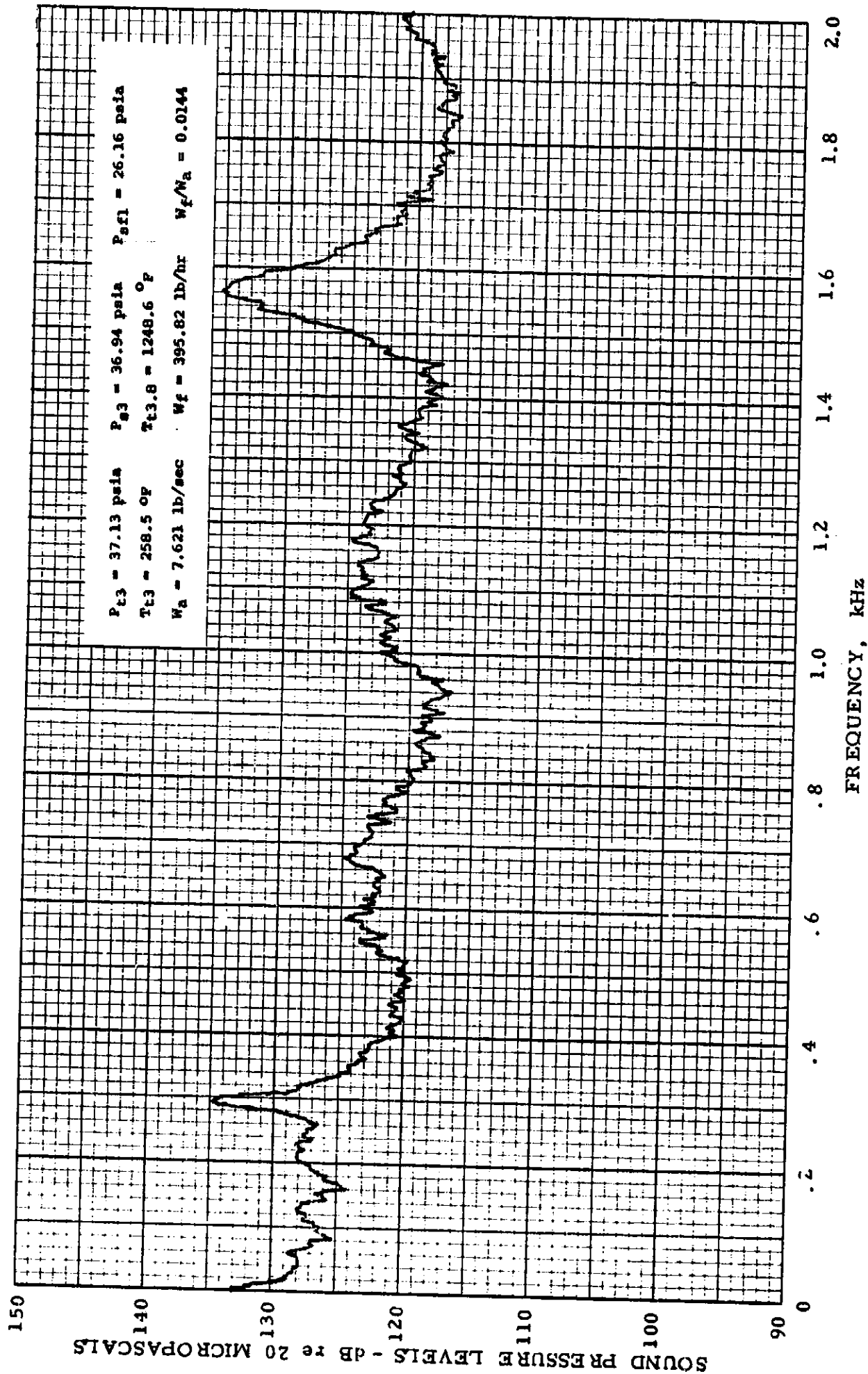
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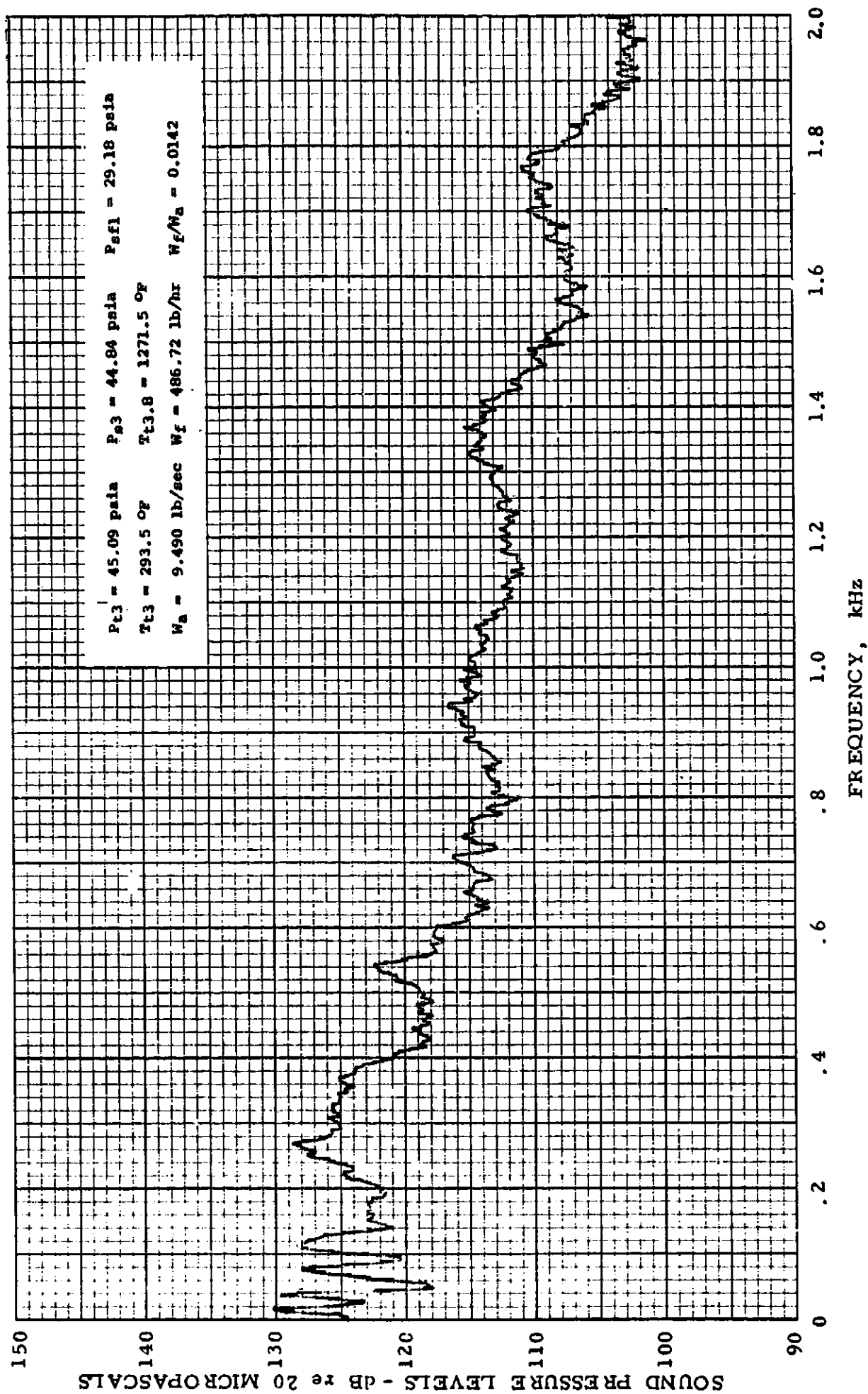
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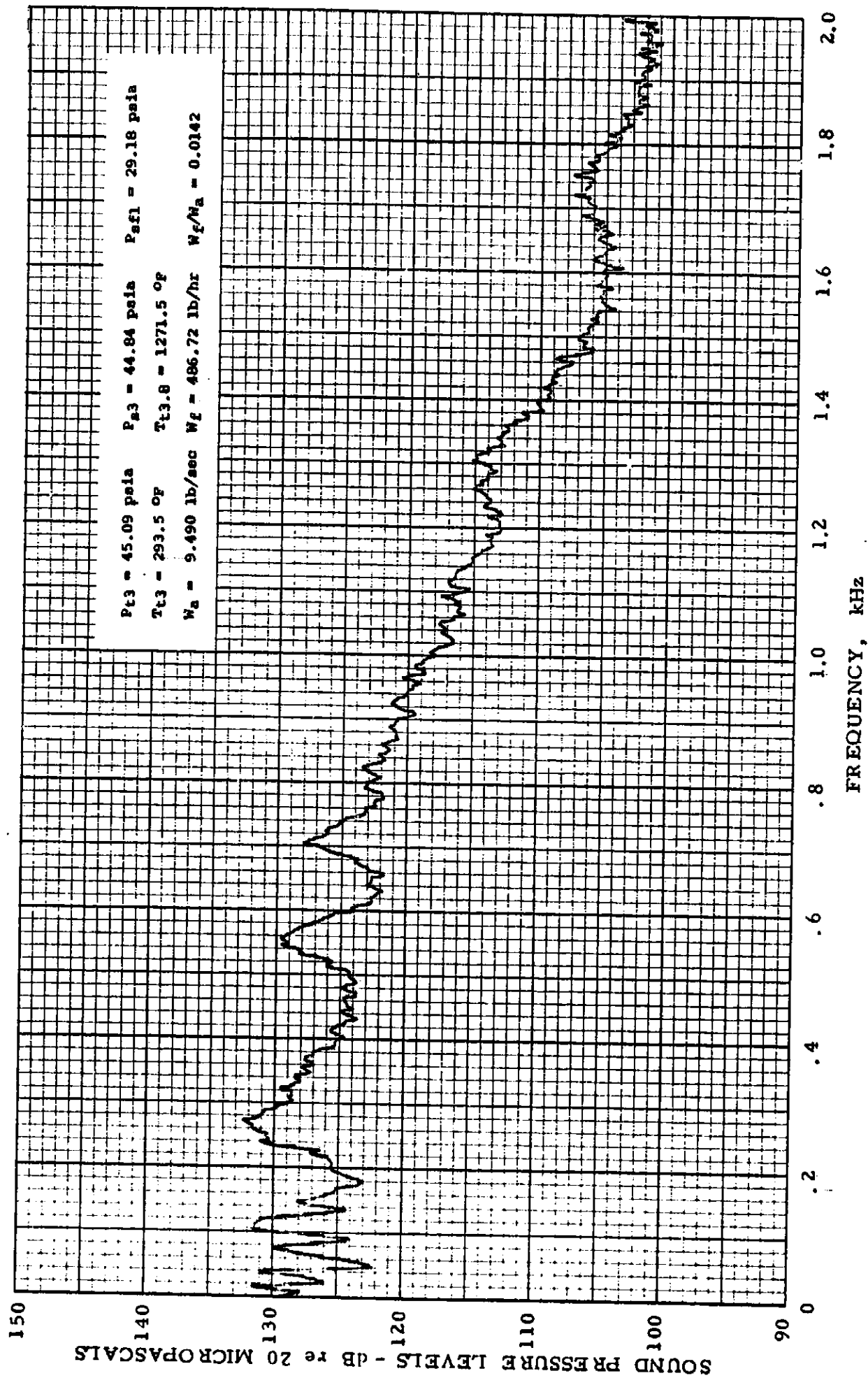
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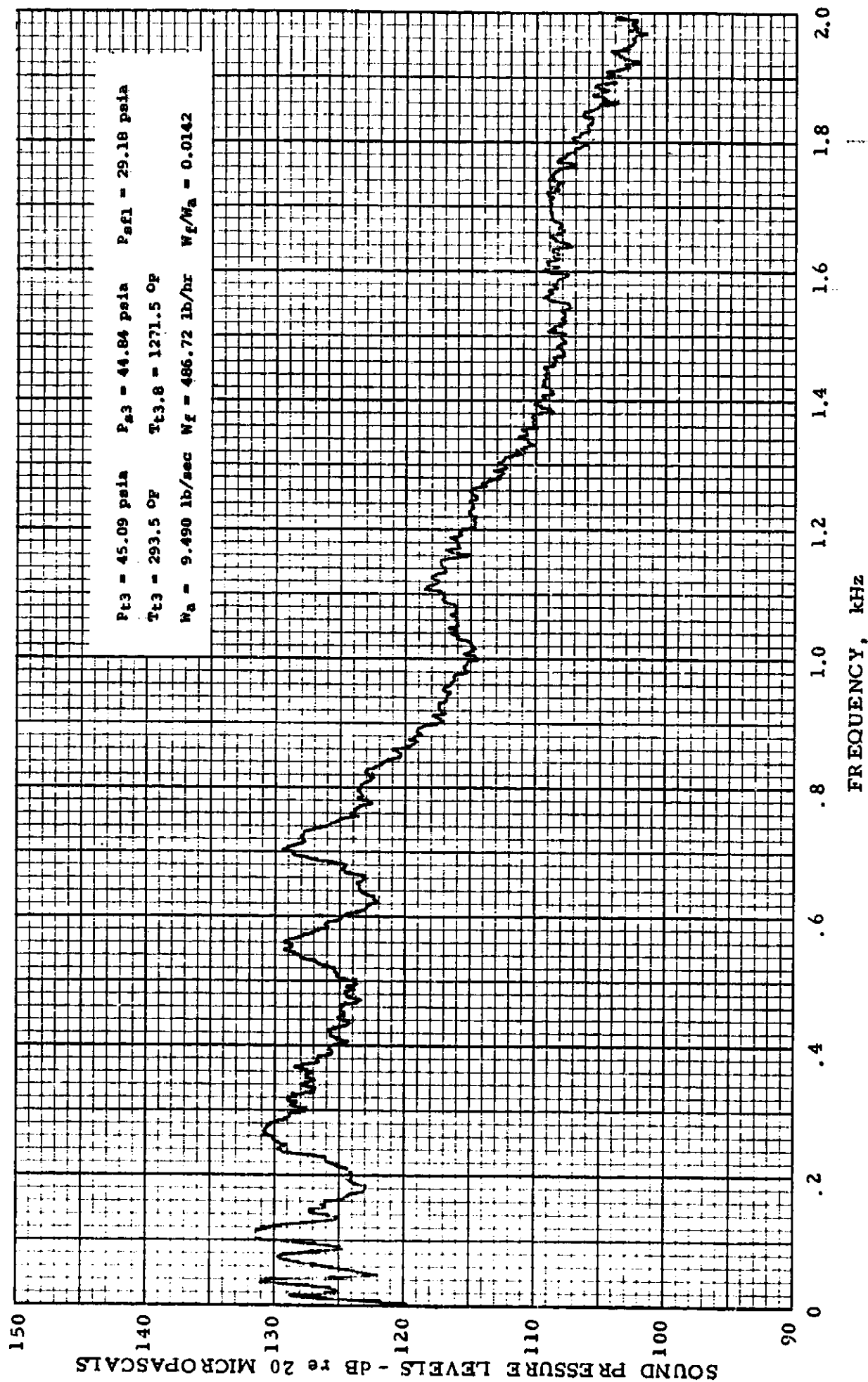
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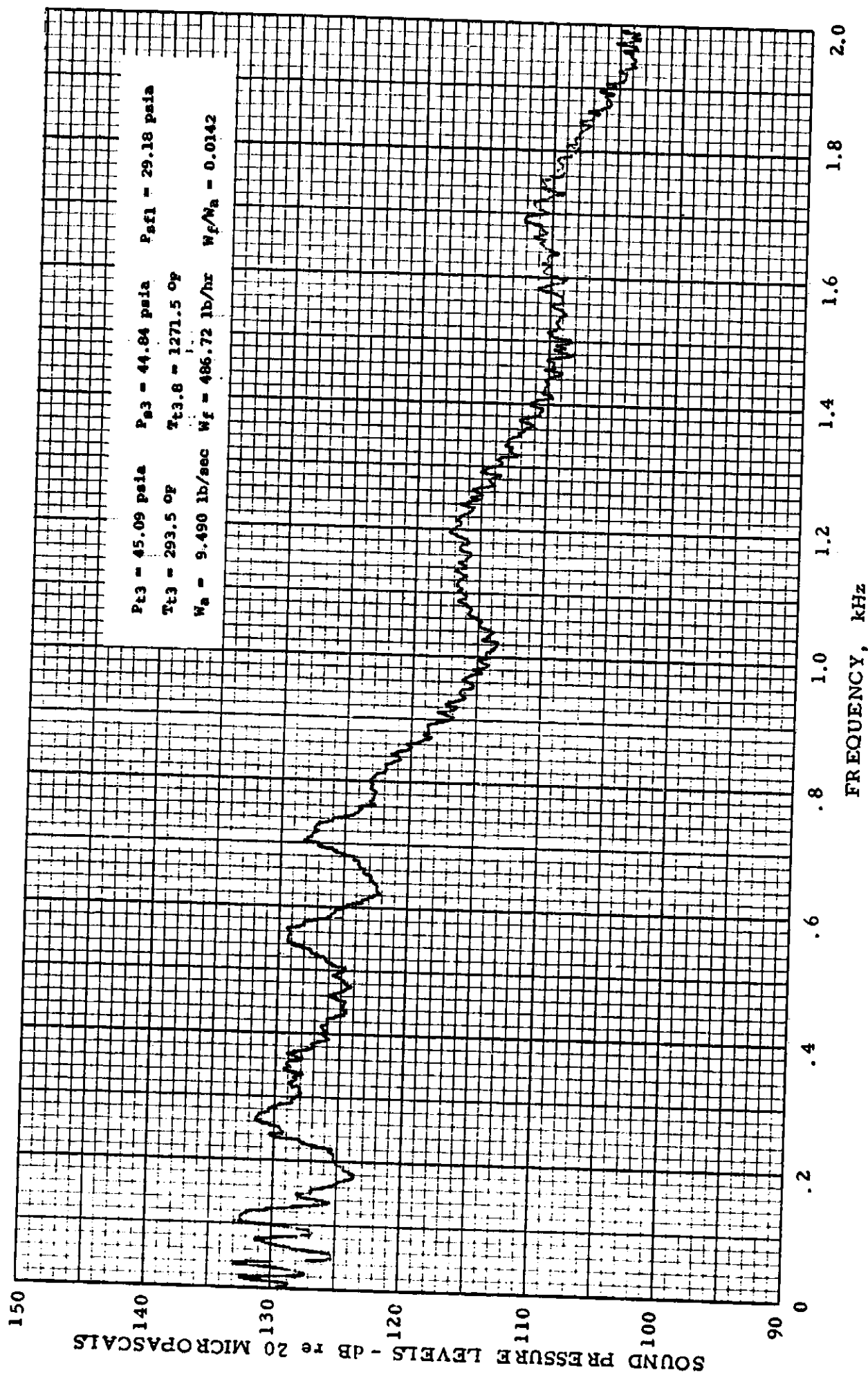
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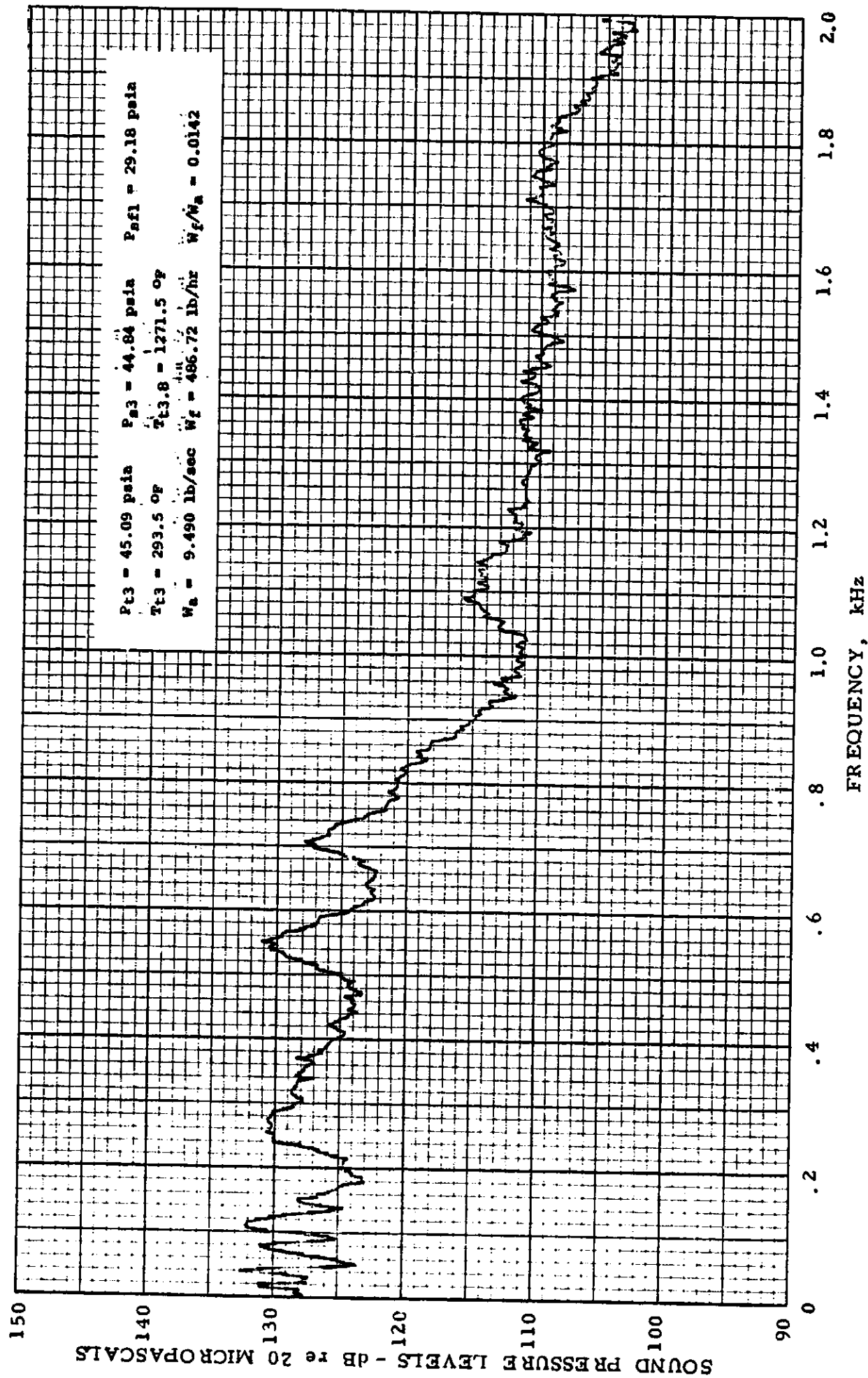
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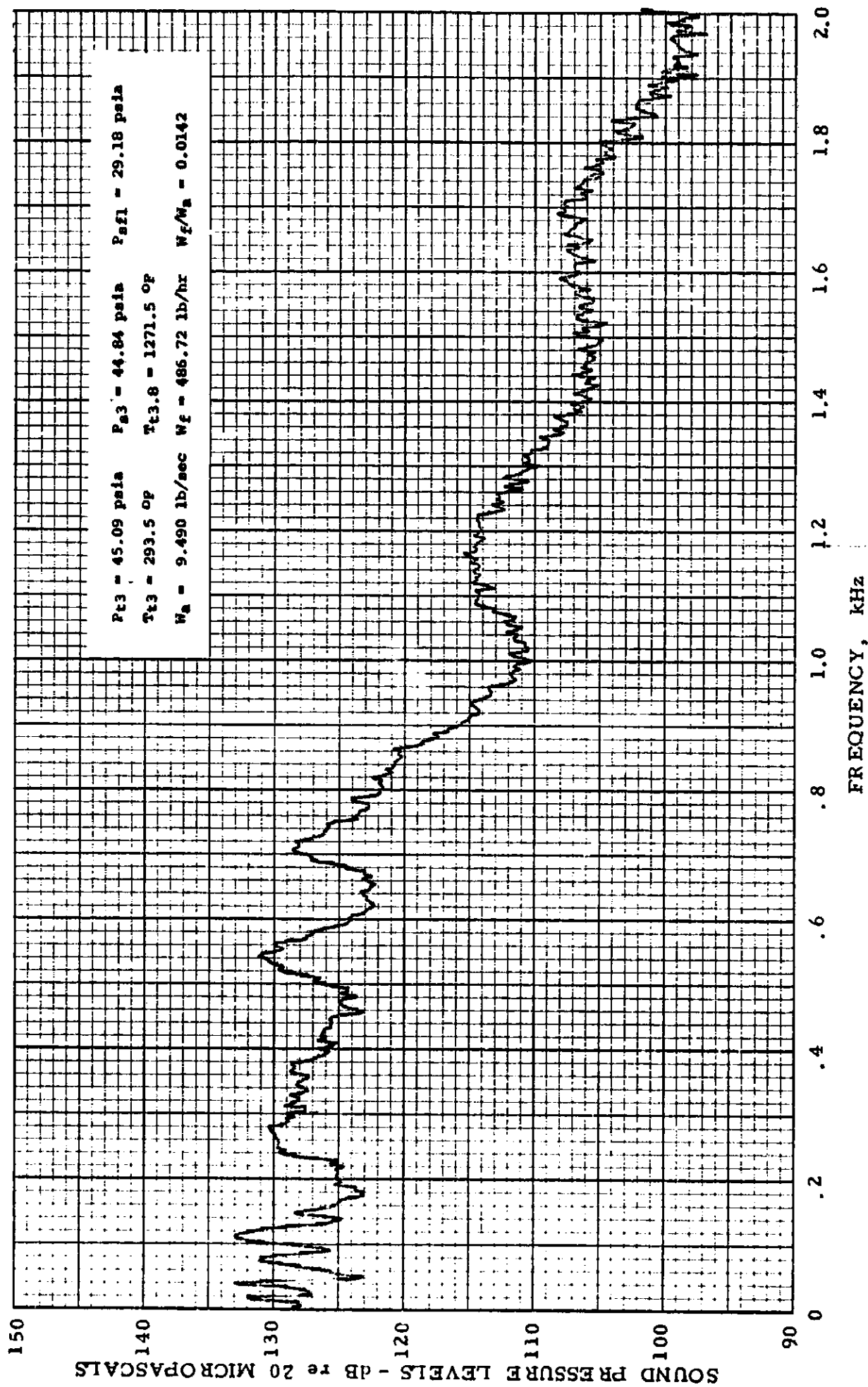
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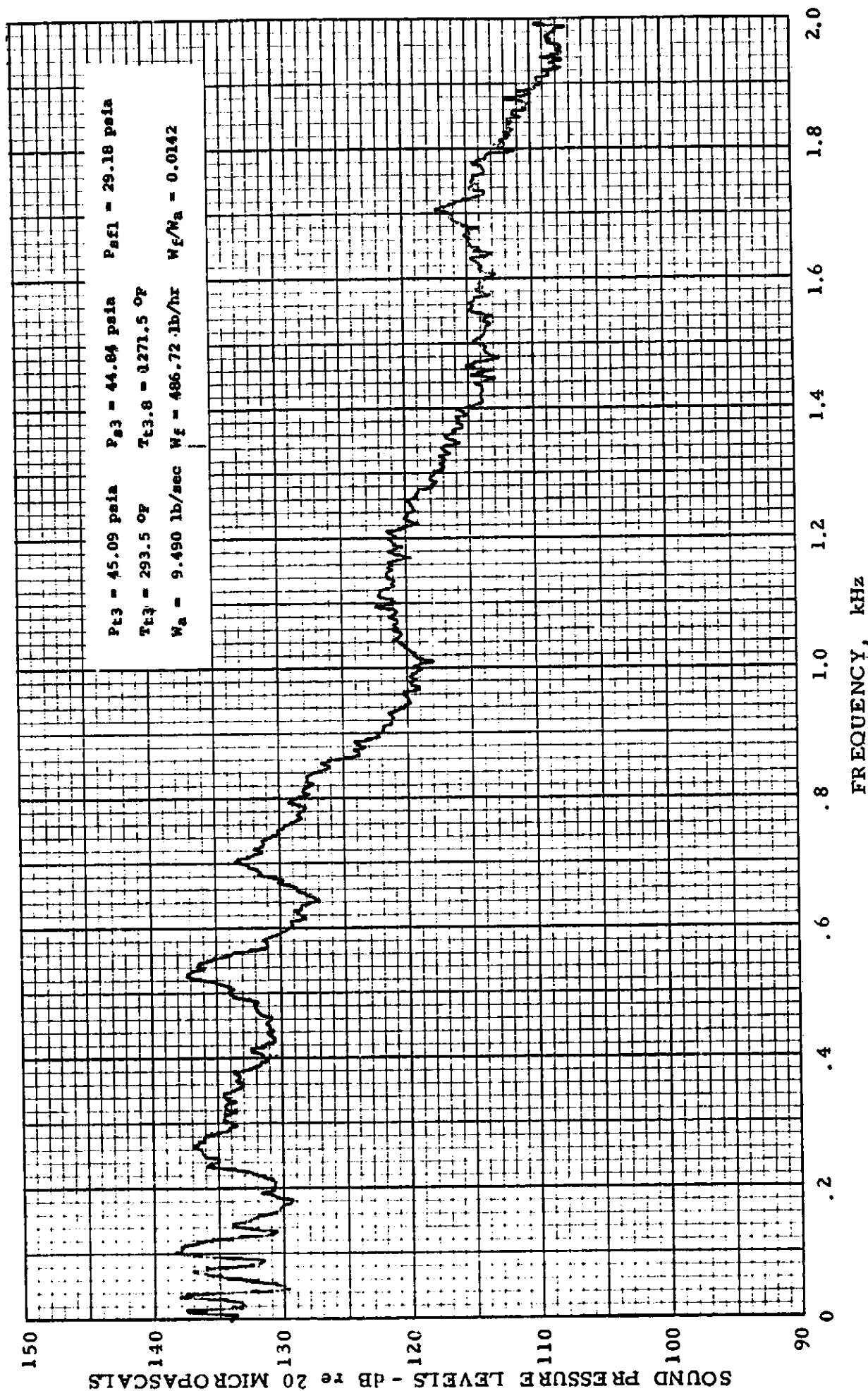
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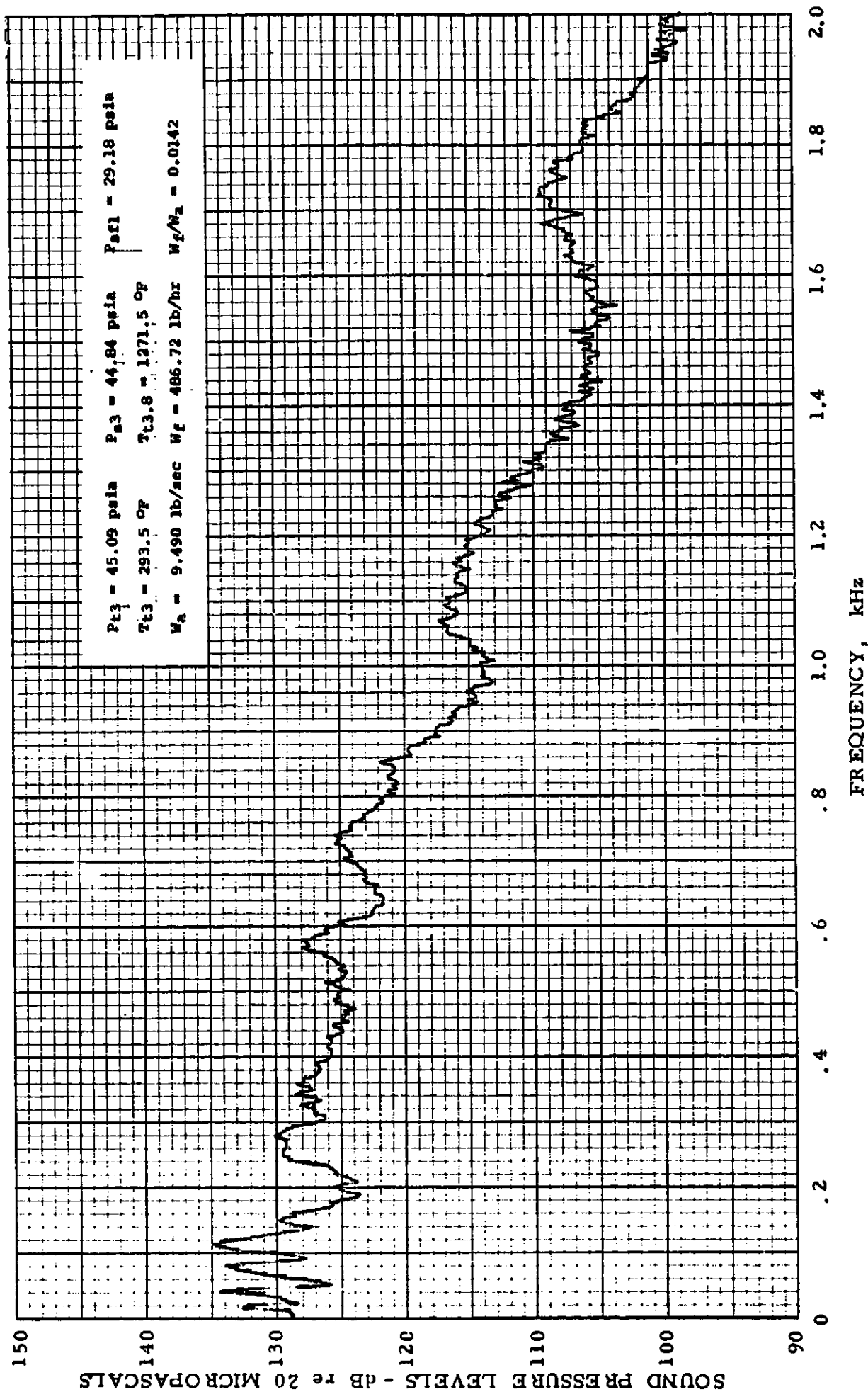
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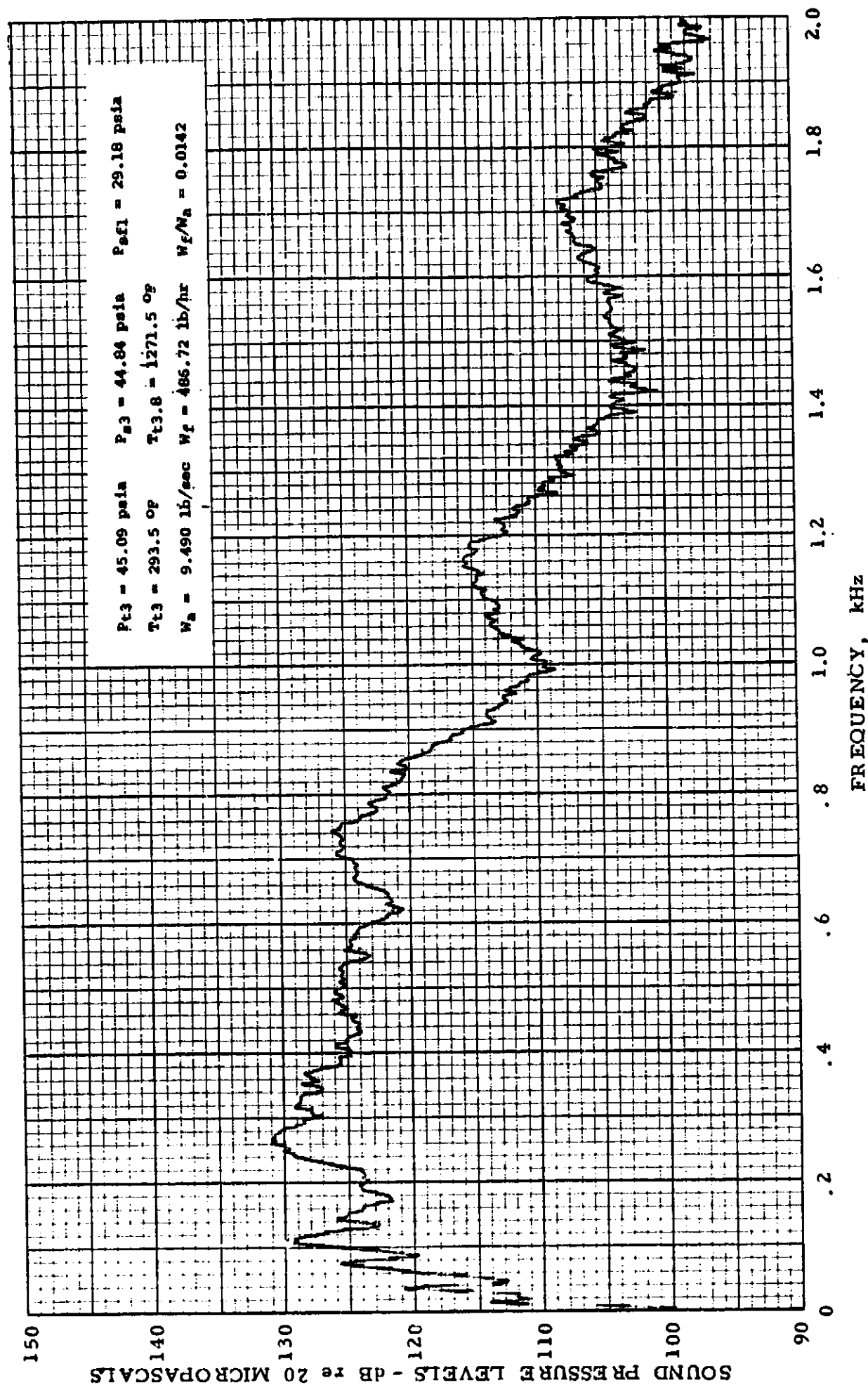
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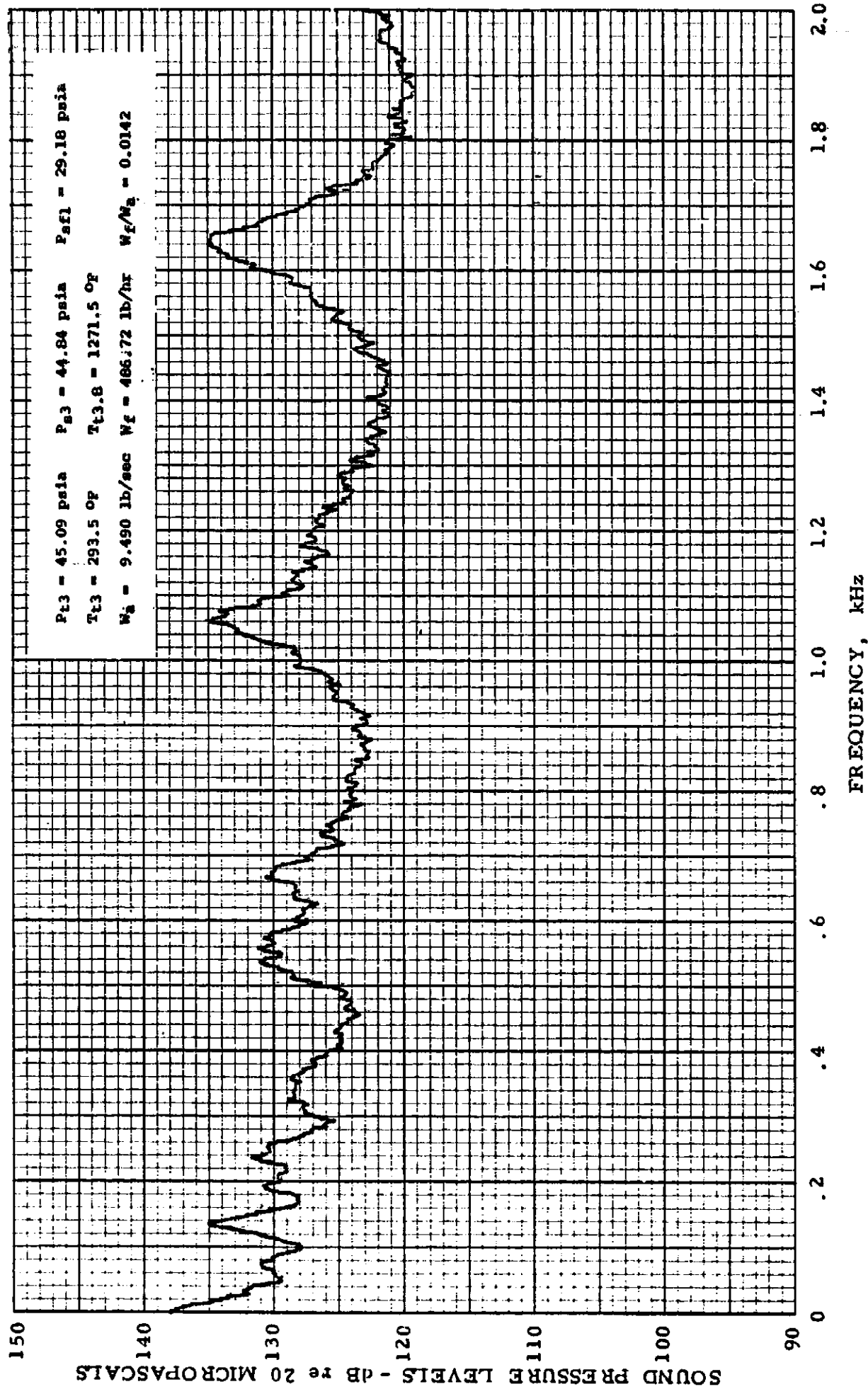
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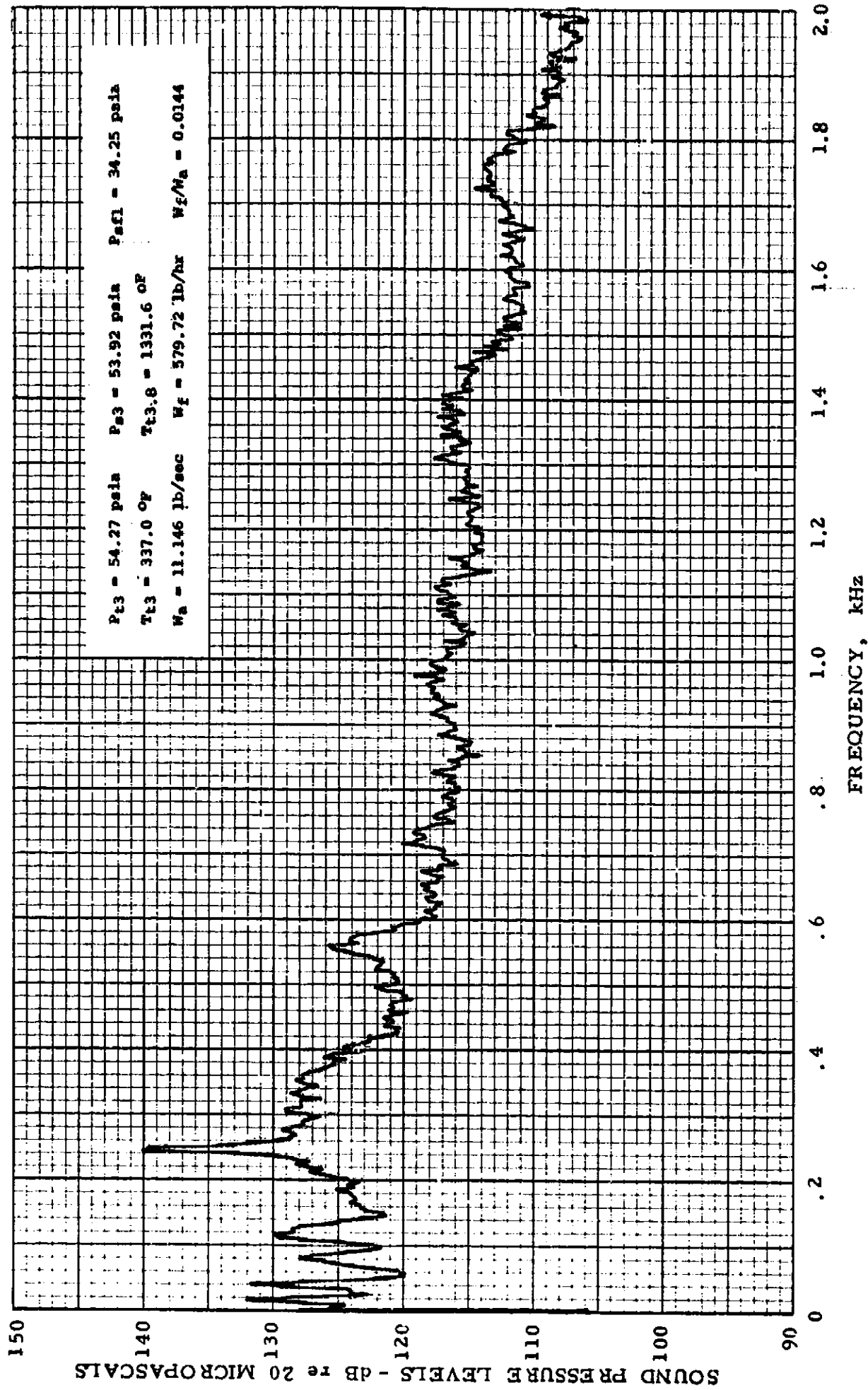
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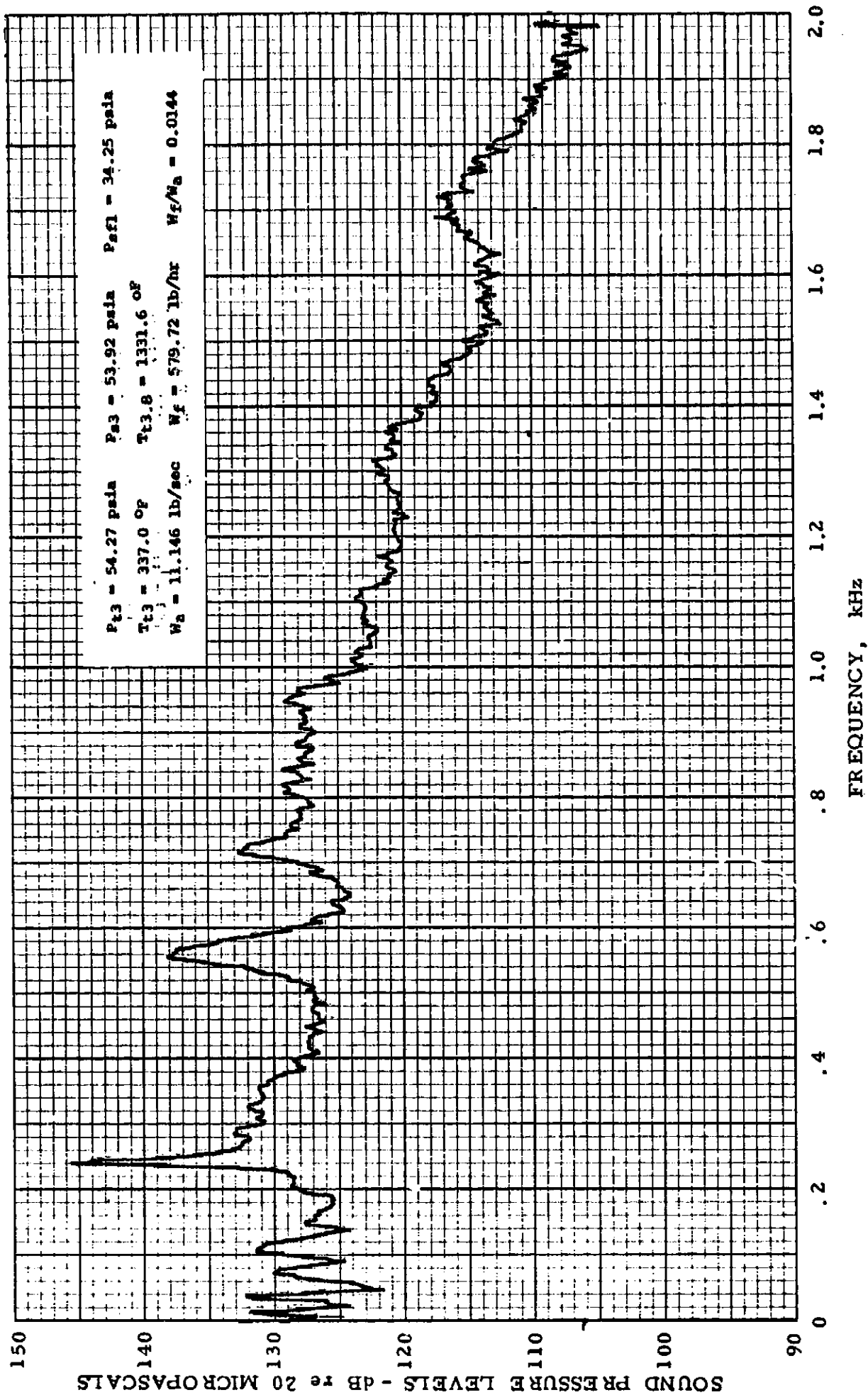
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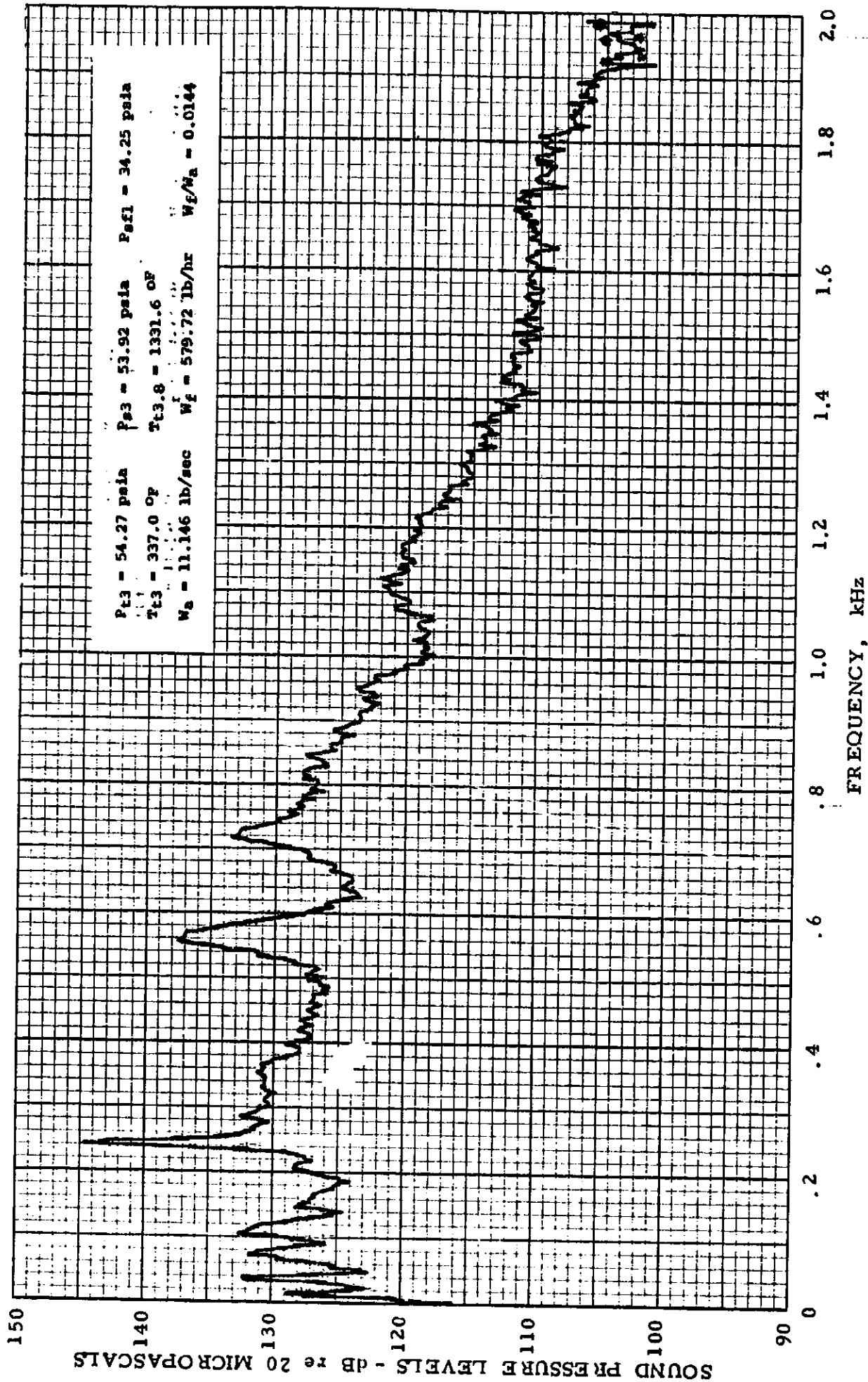
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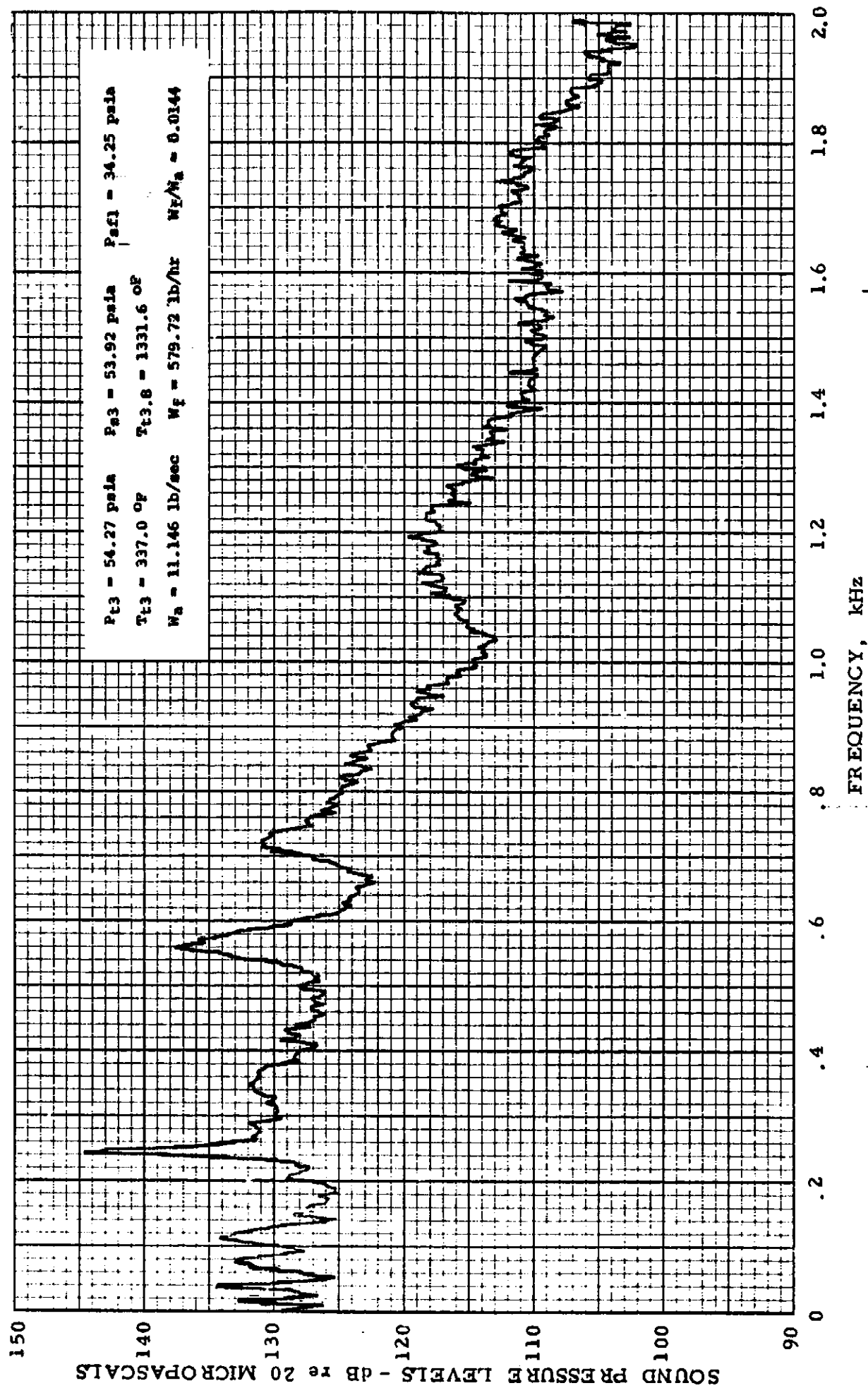
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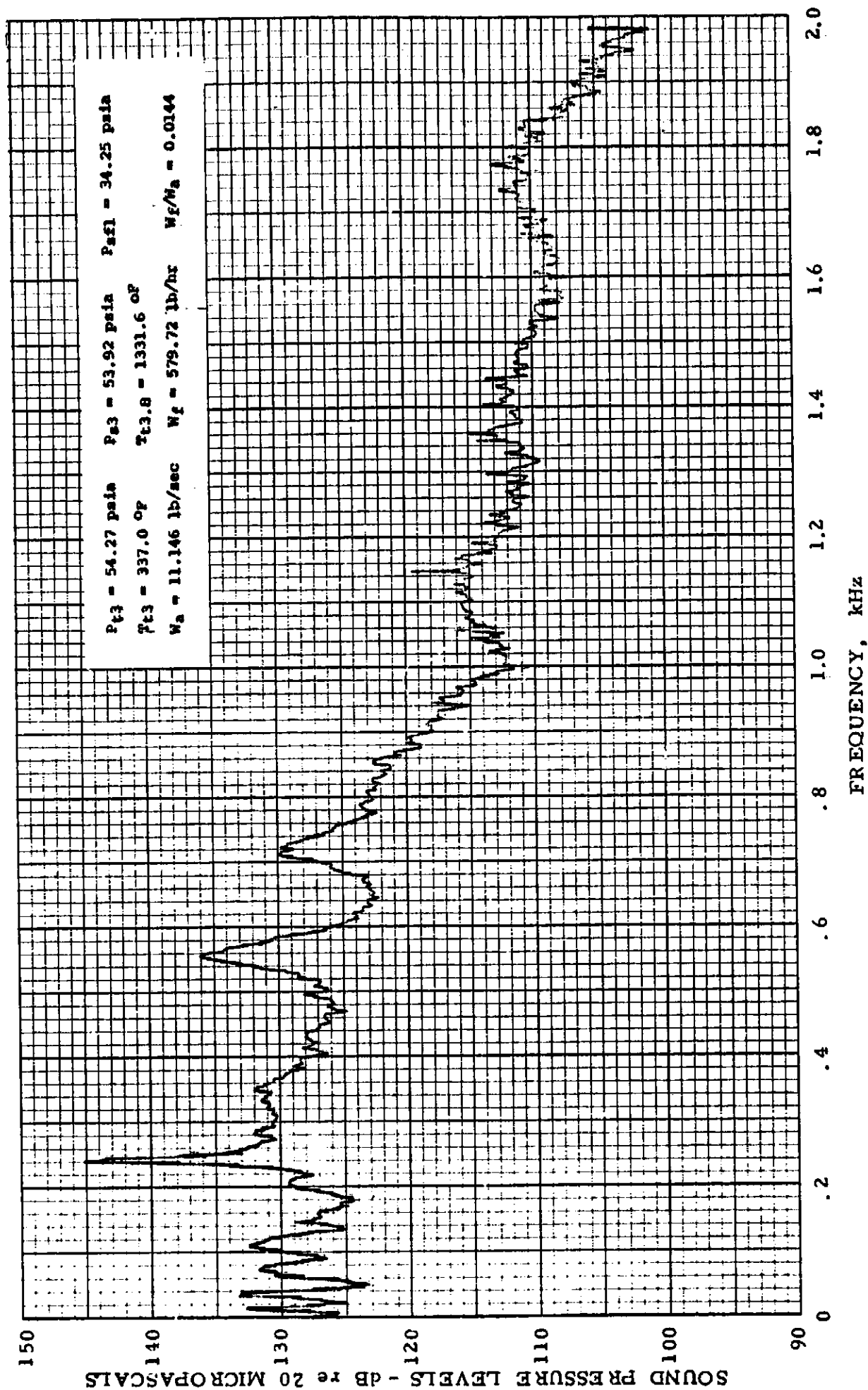
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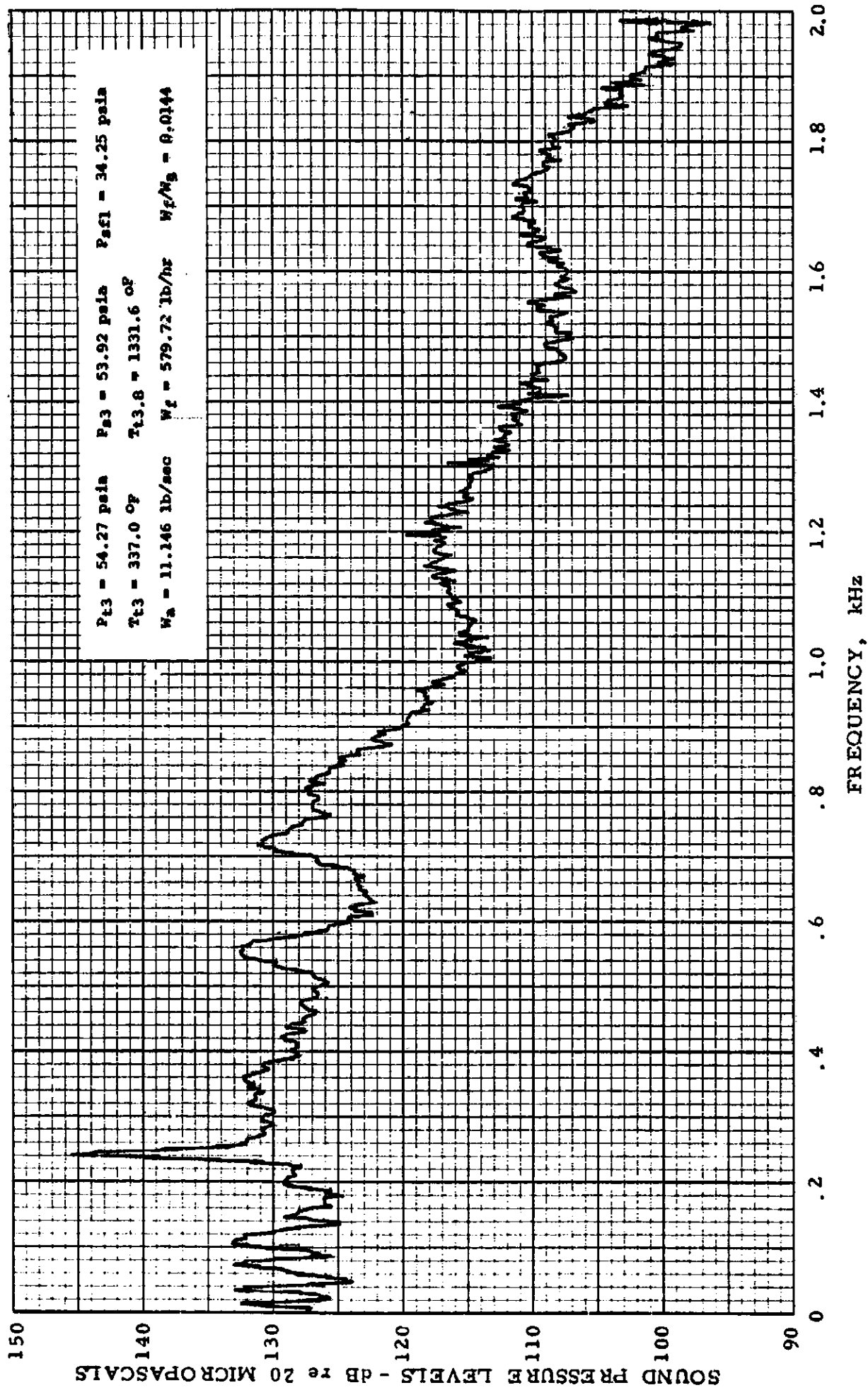
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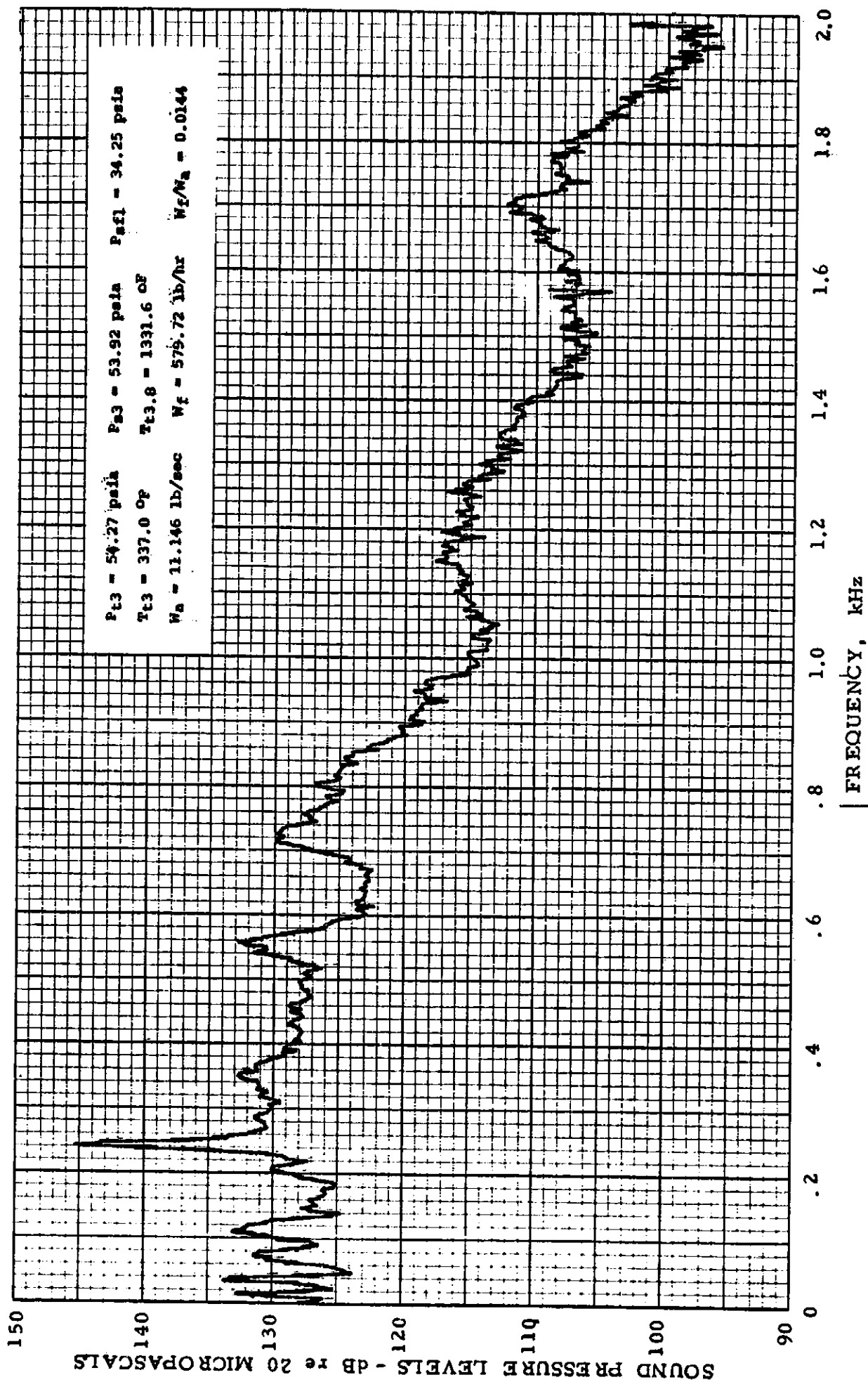
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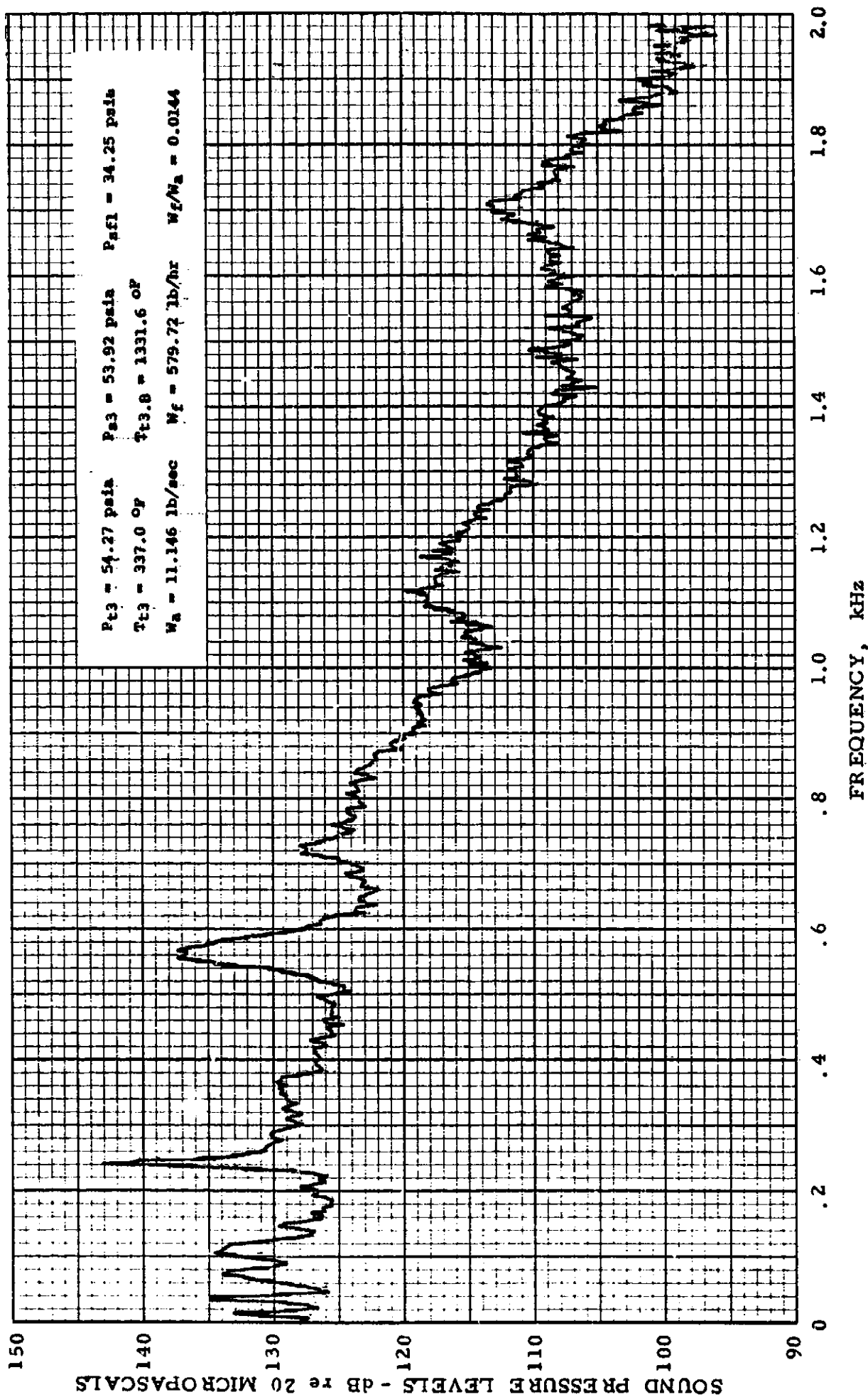
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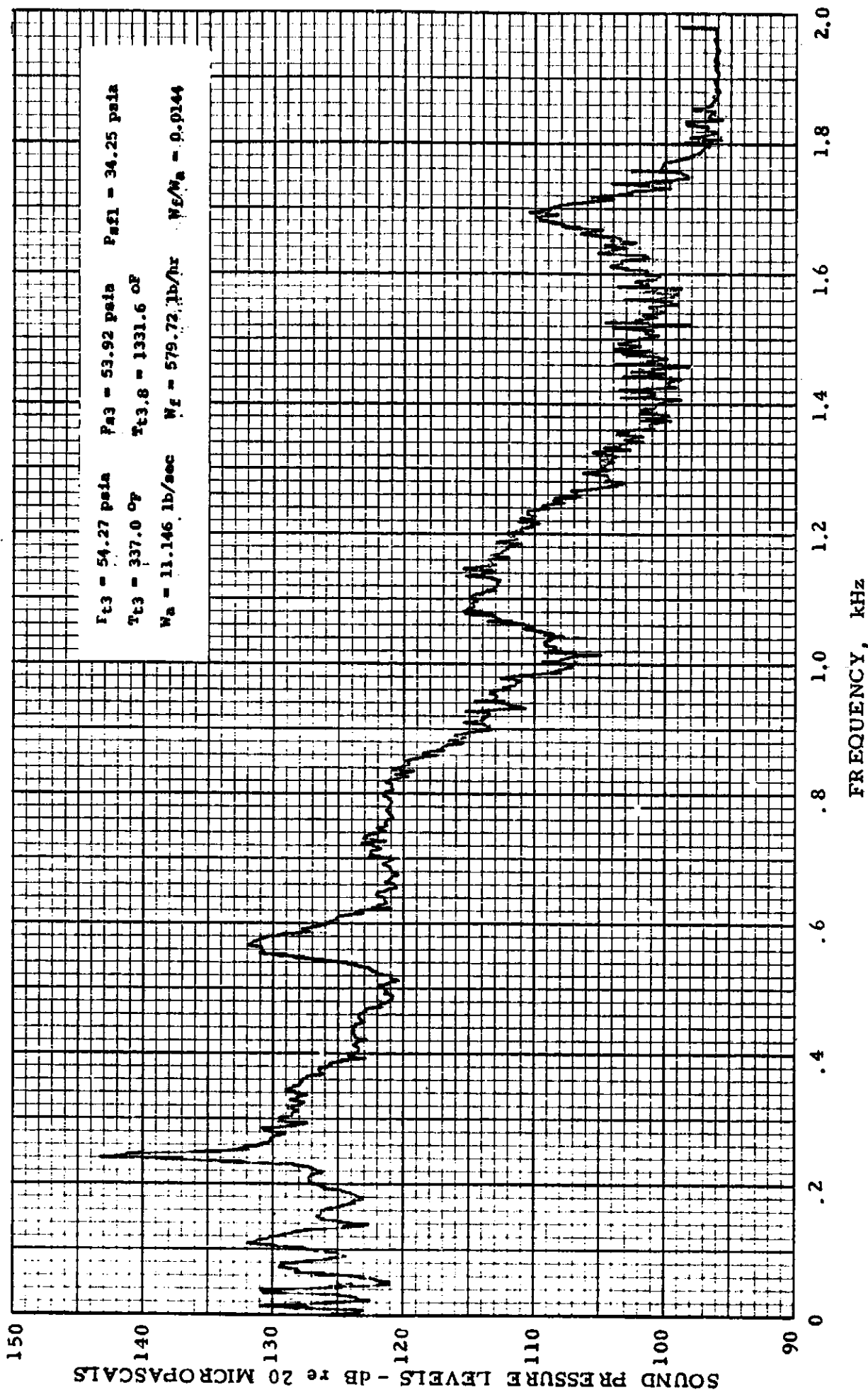
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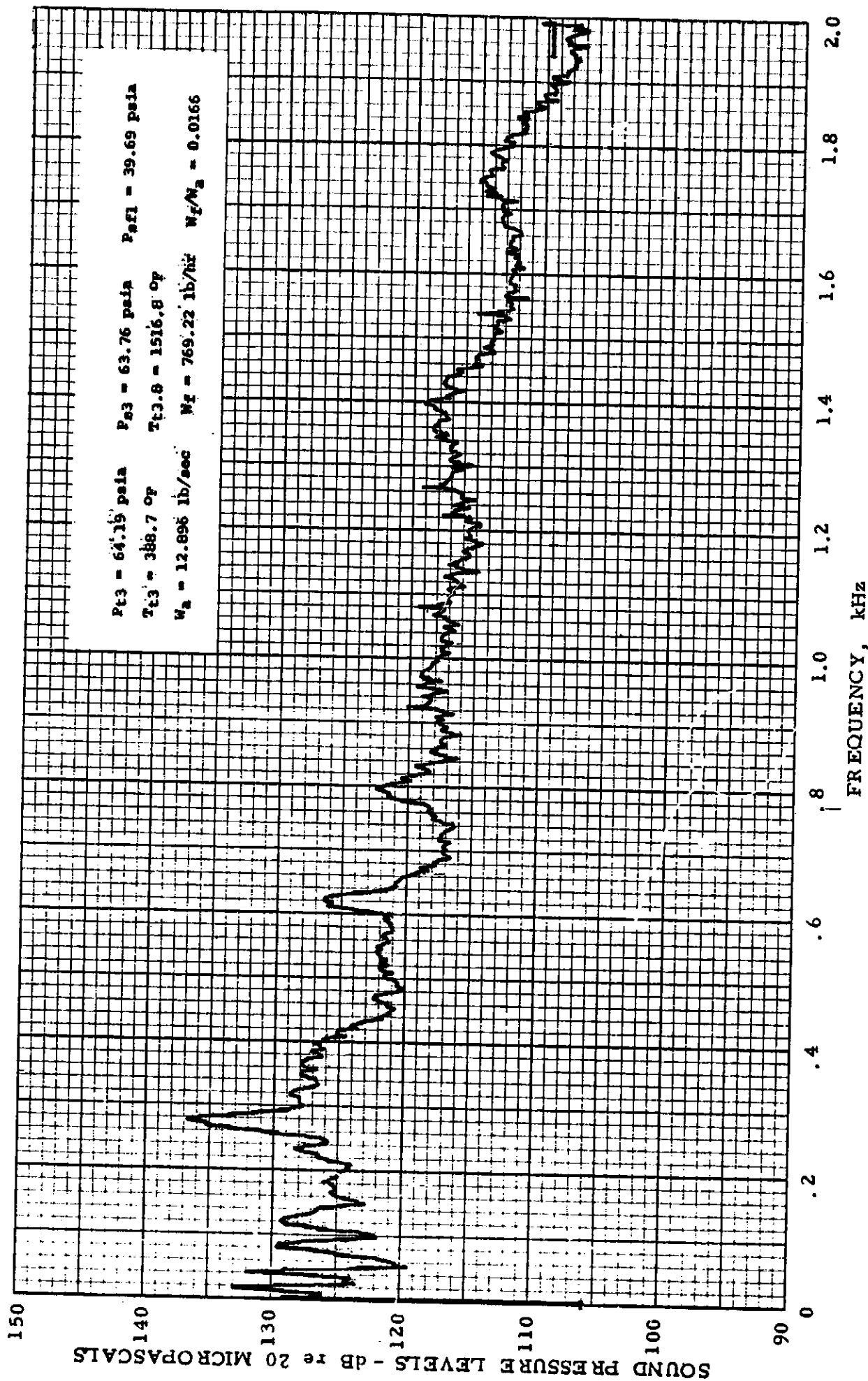
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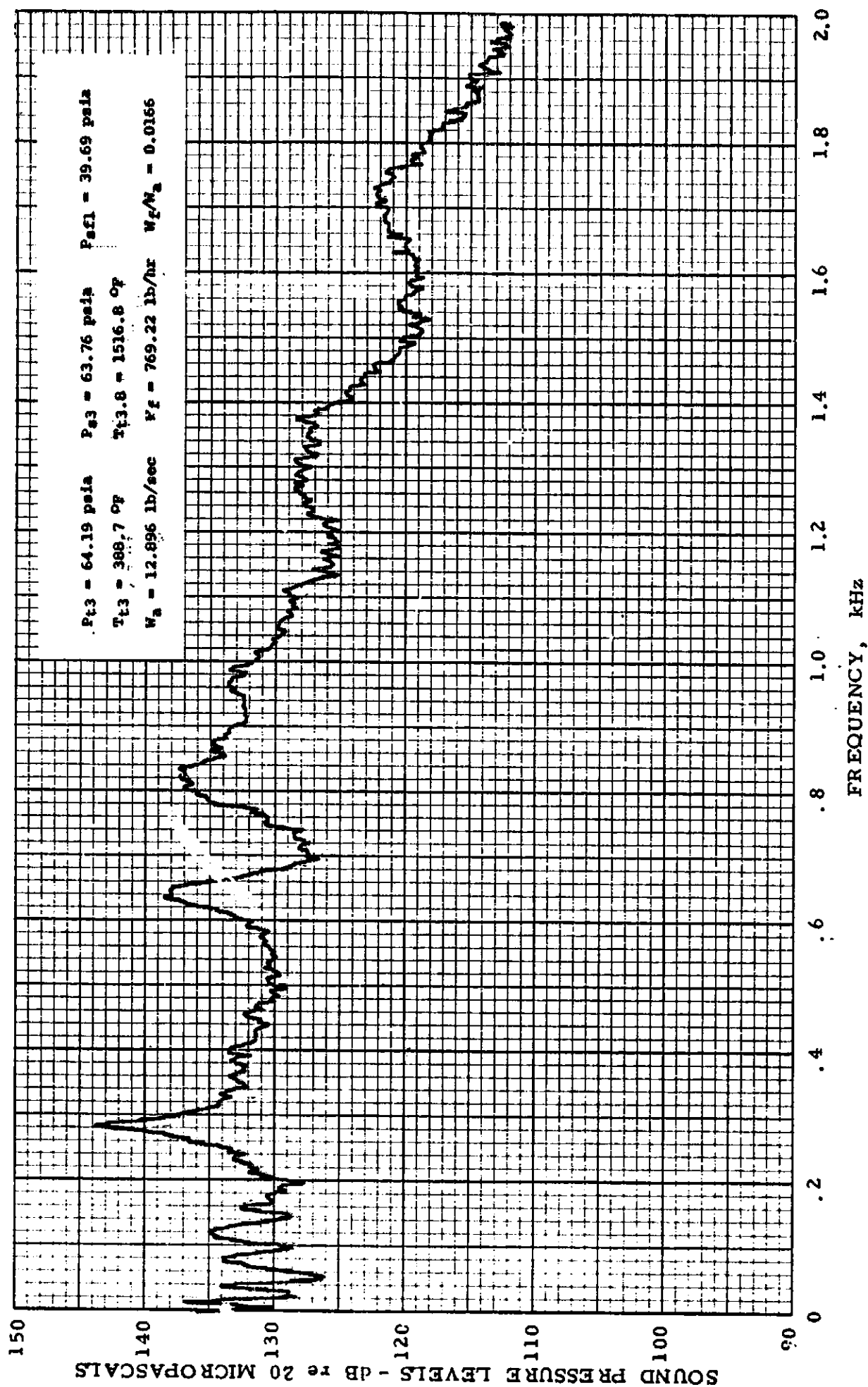
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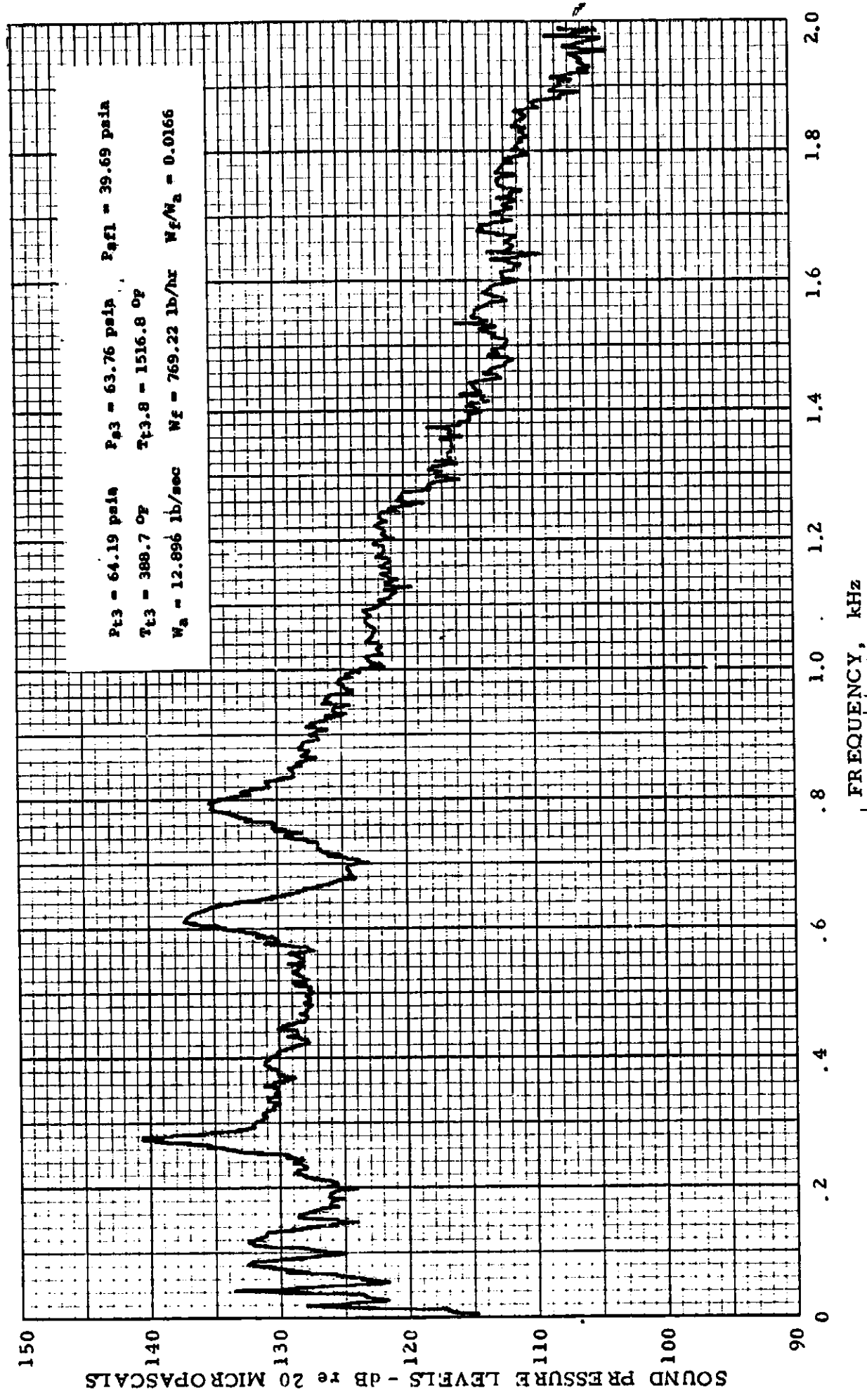
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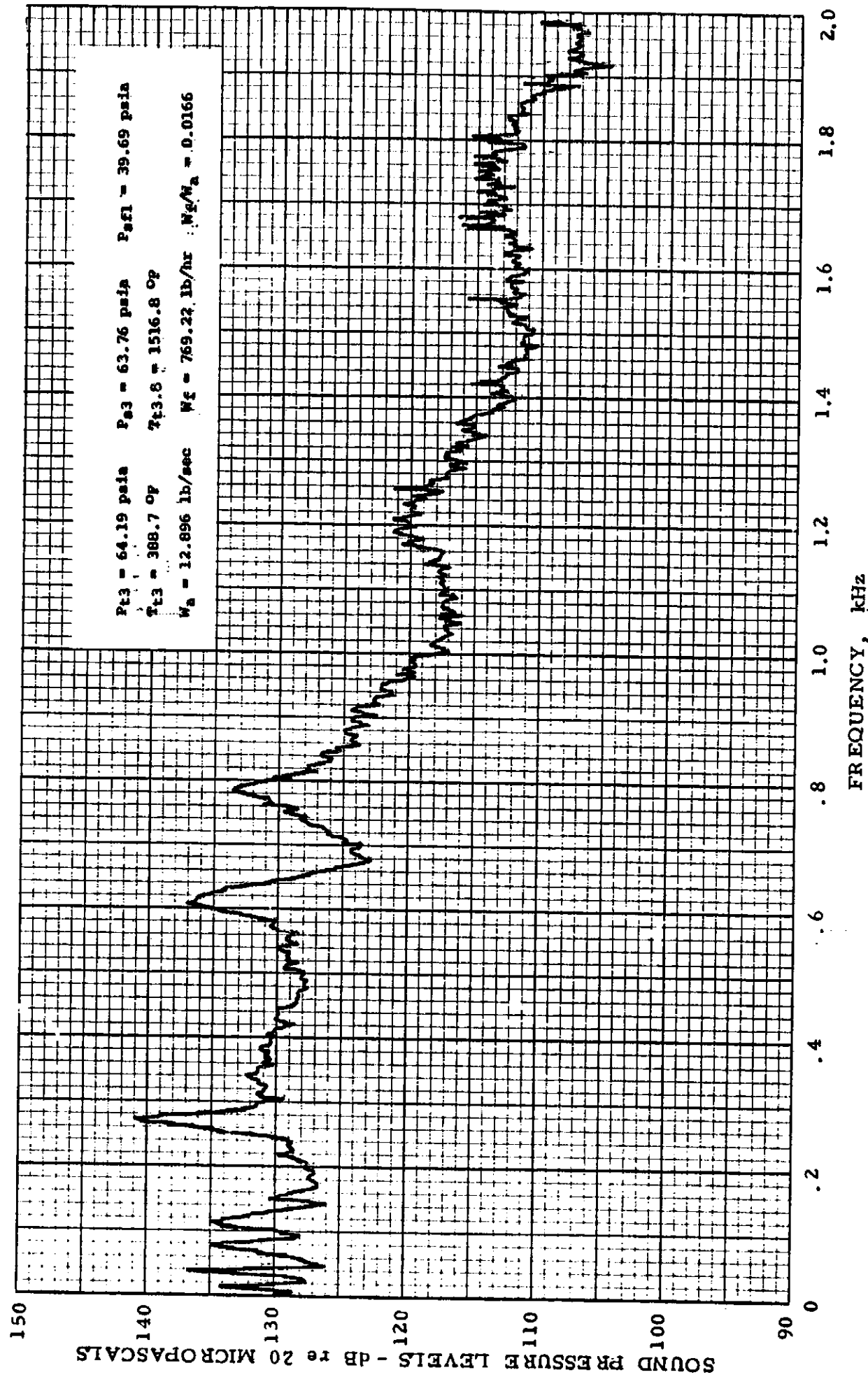
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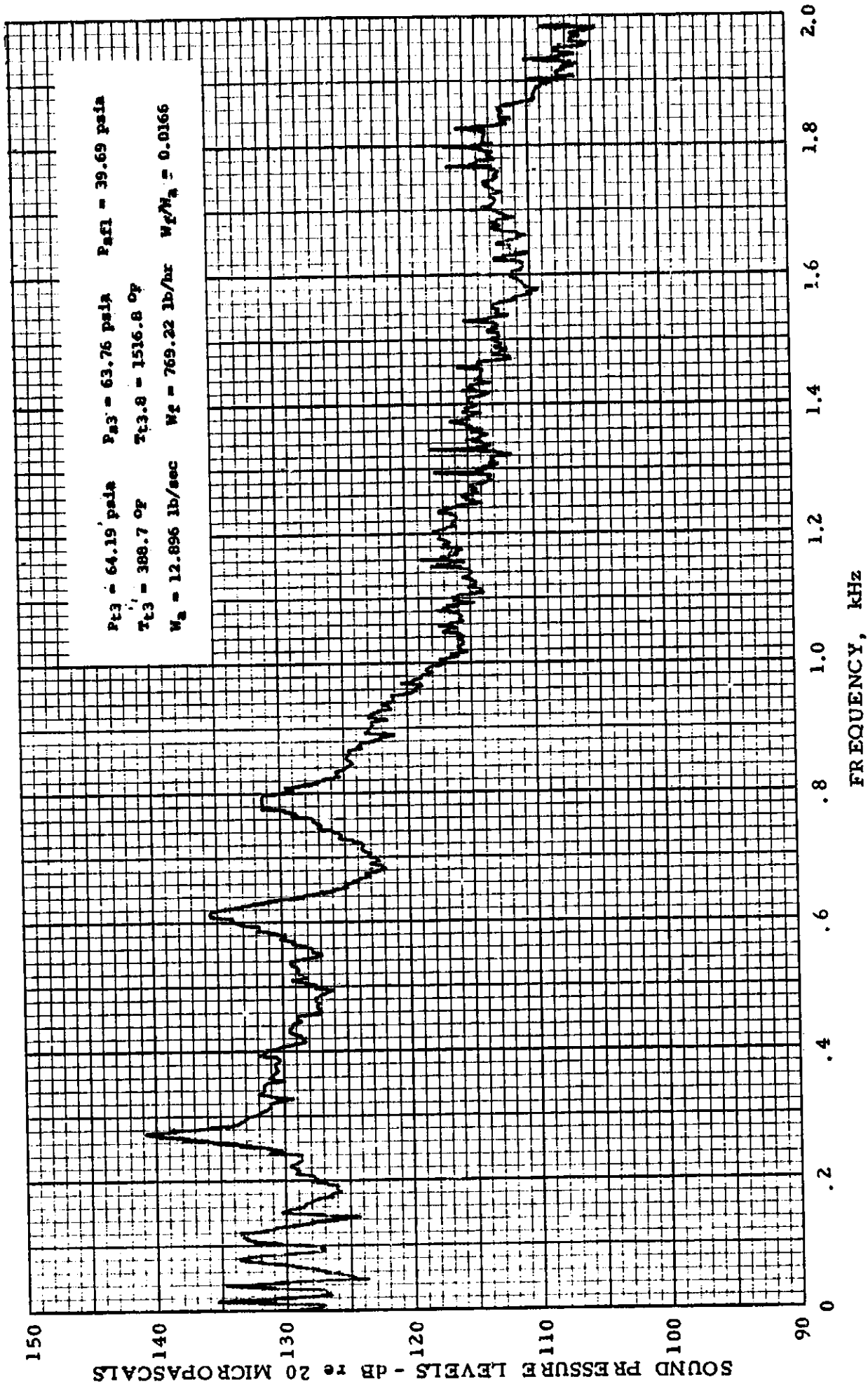
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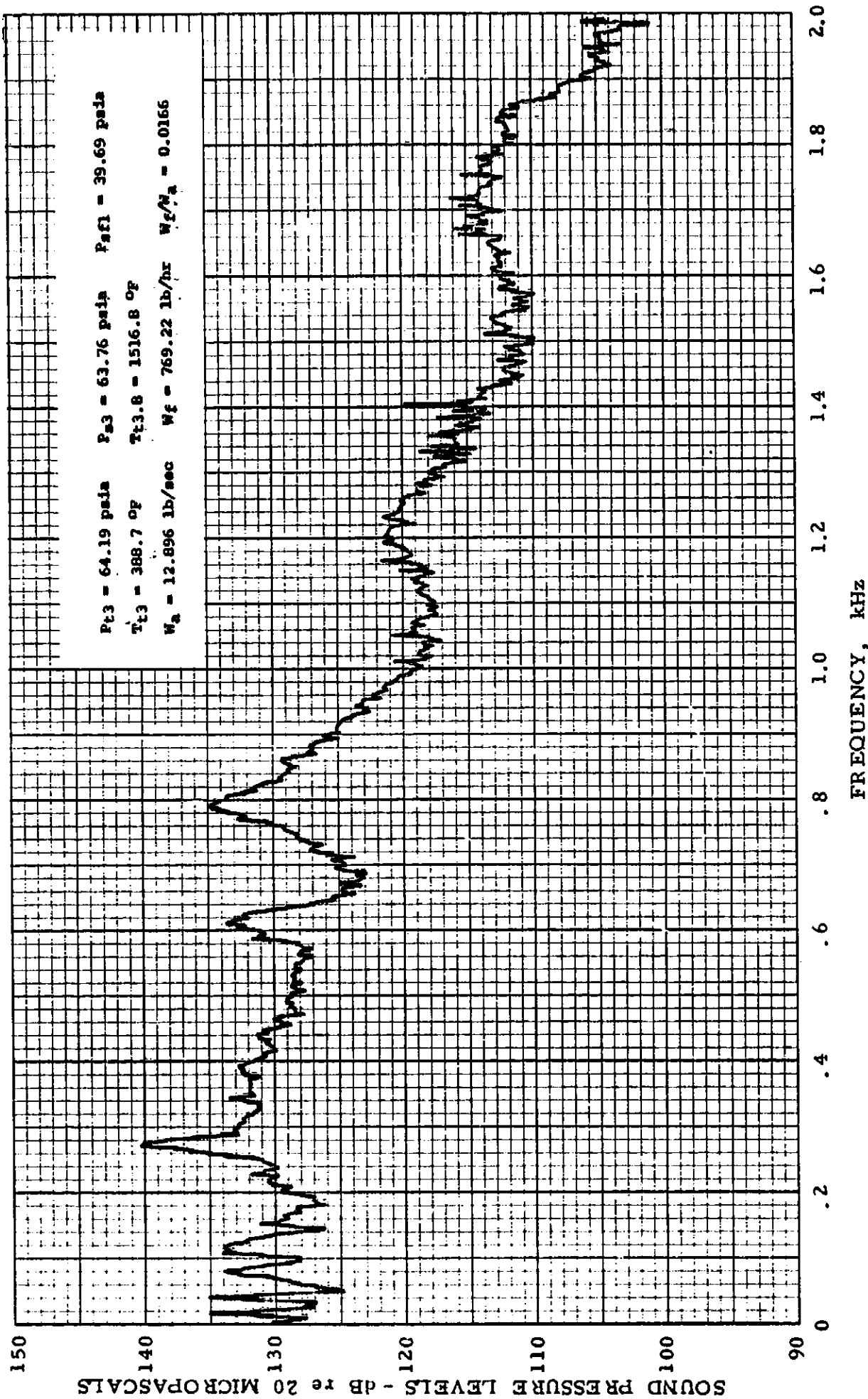
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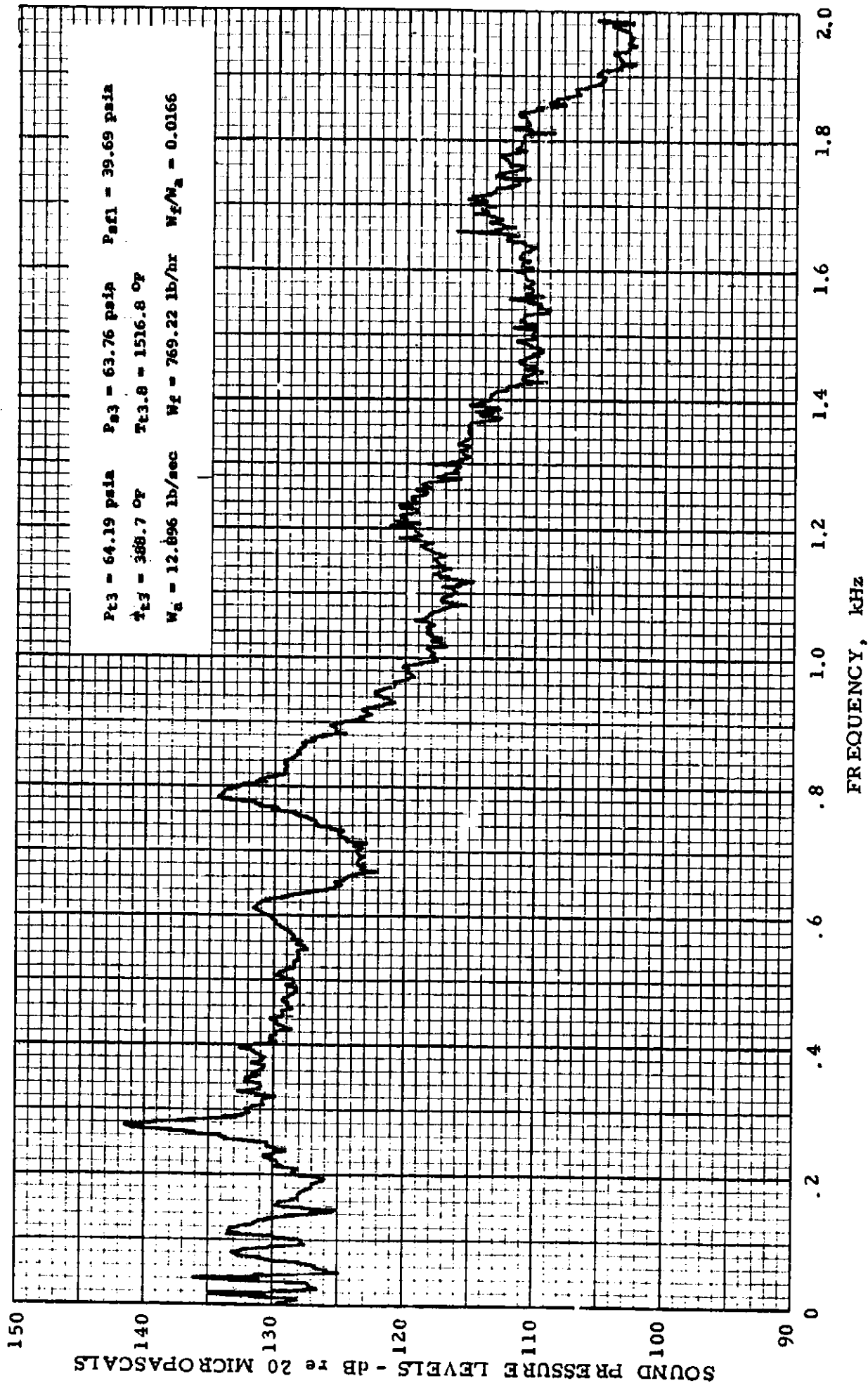
NARROW BAND SPECTRUM AT PROBE NUMBER 4 DURING RUN POINT NUMBER 107



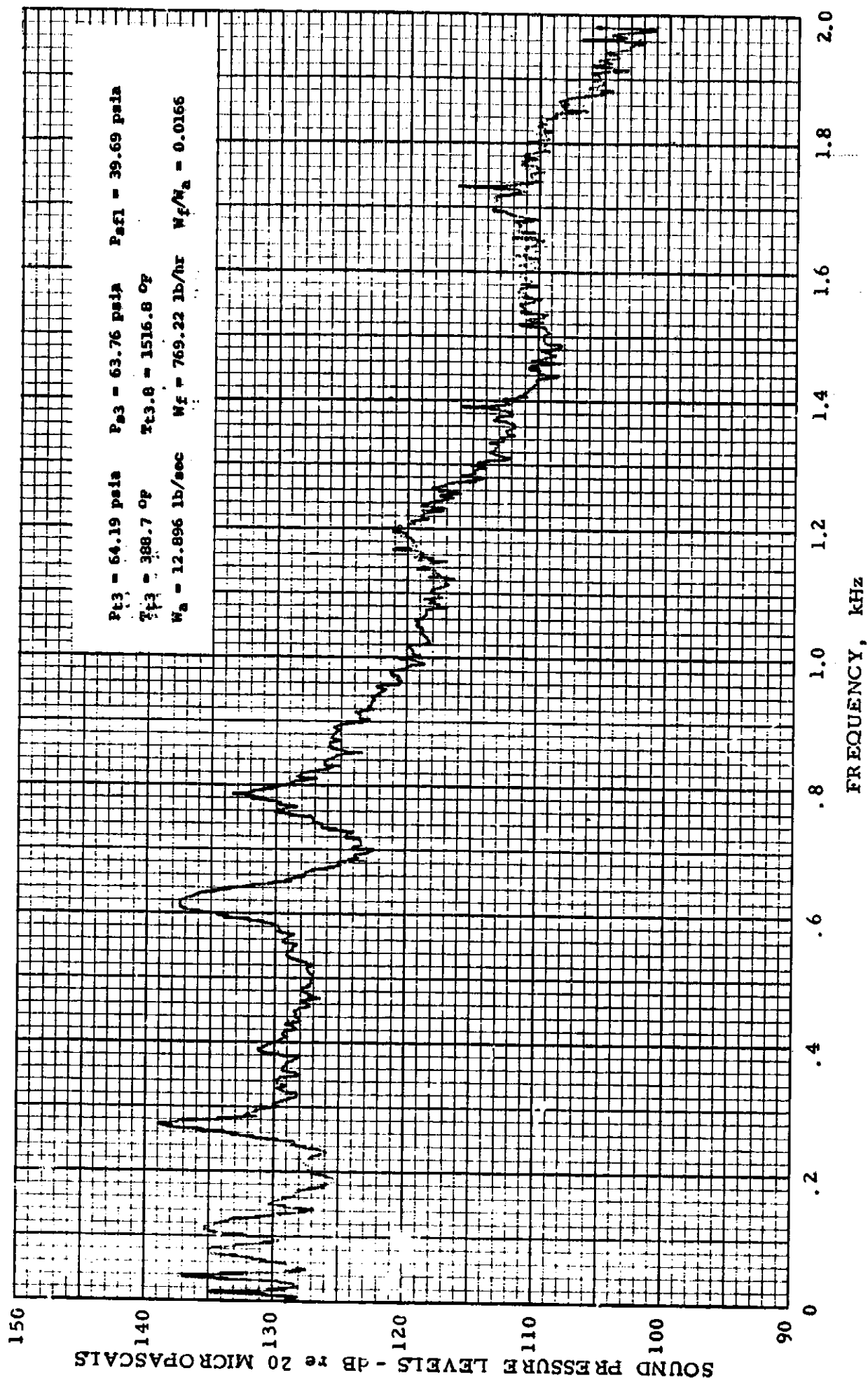
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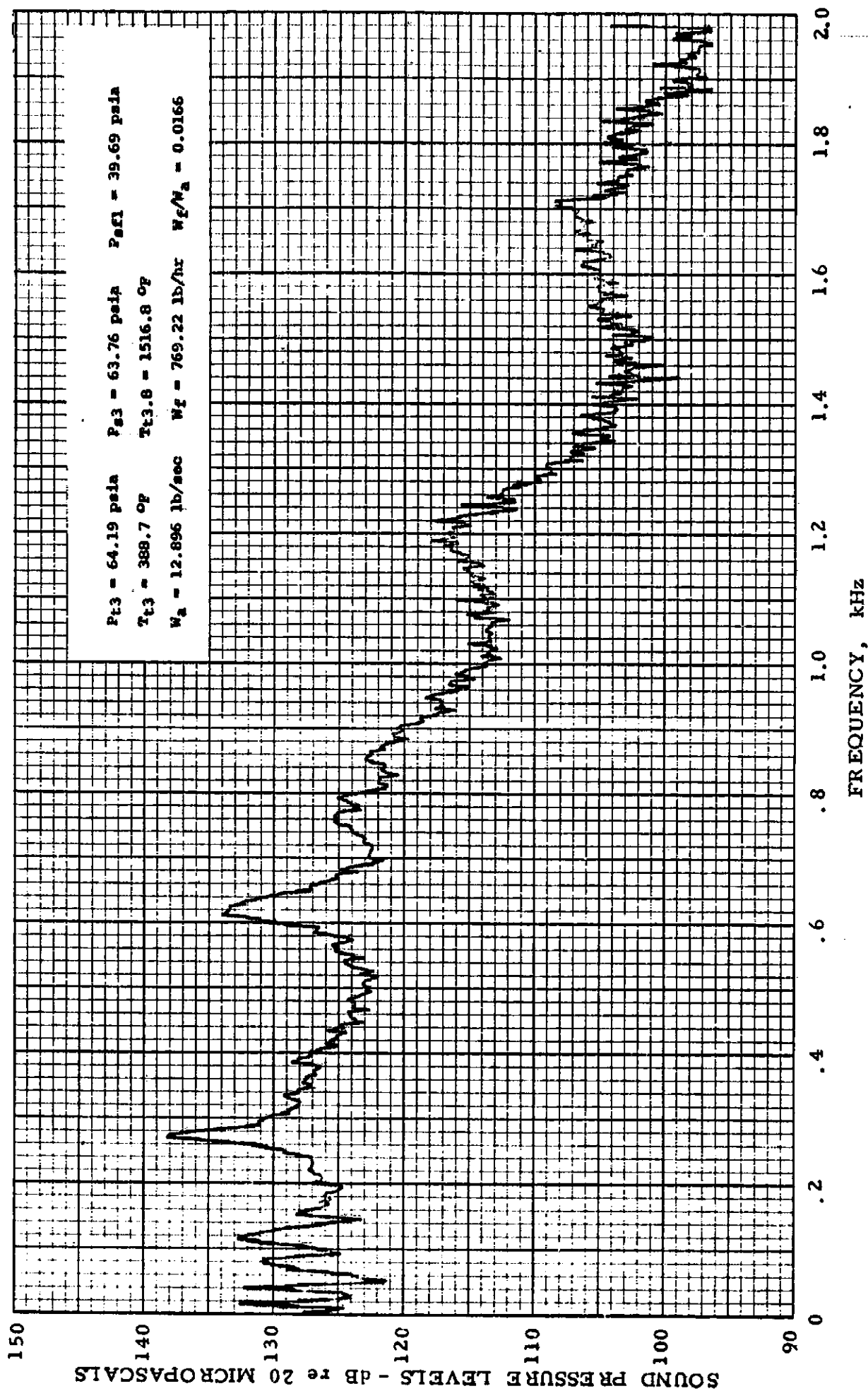
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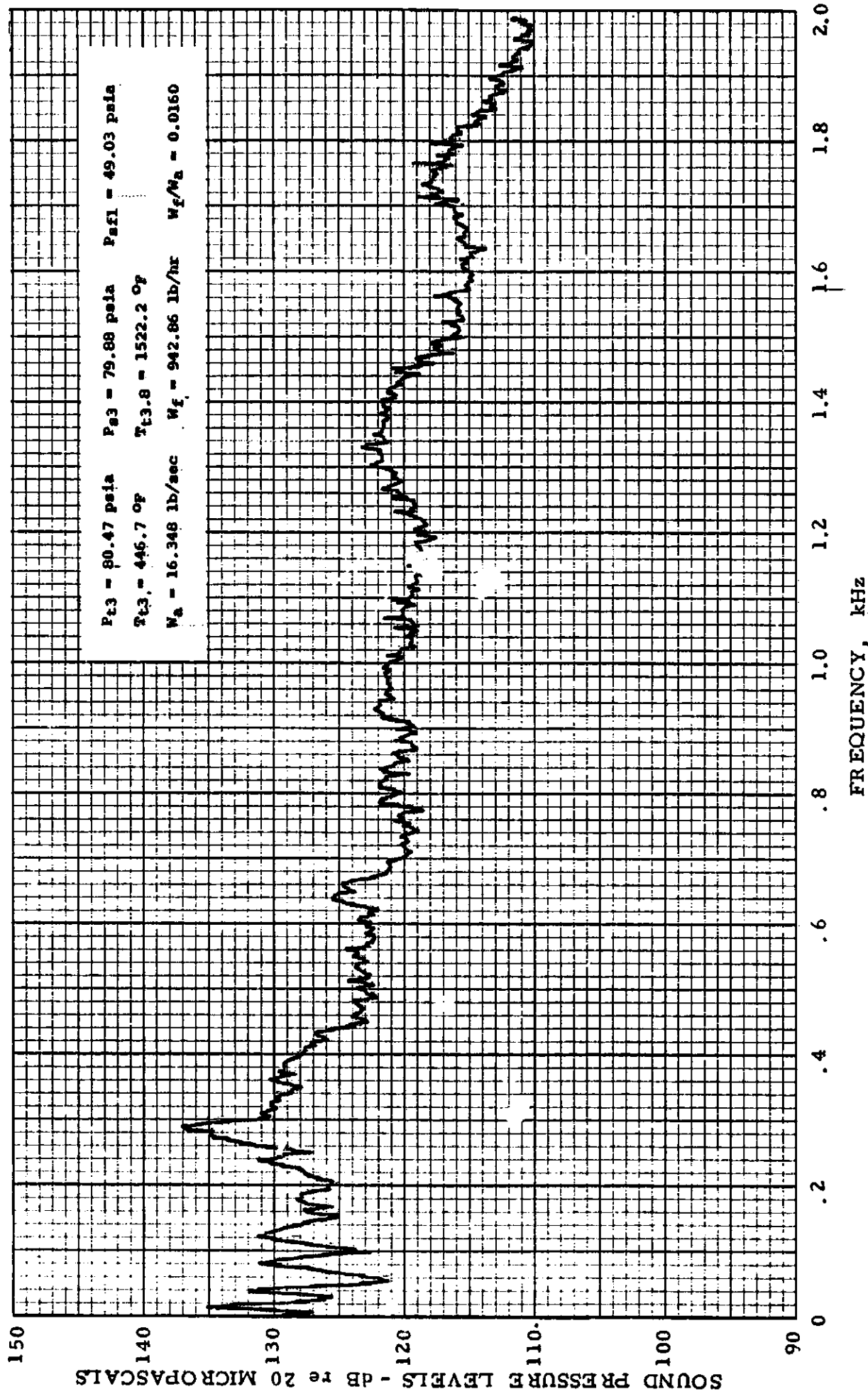
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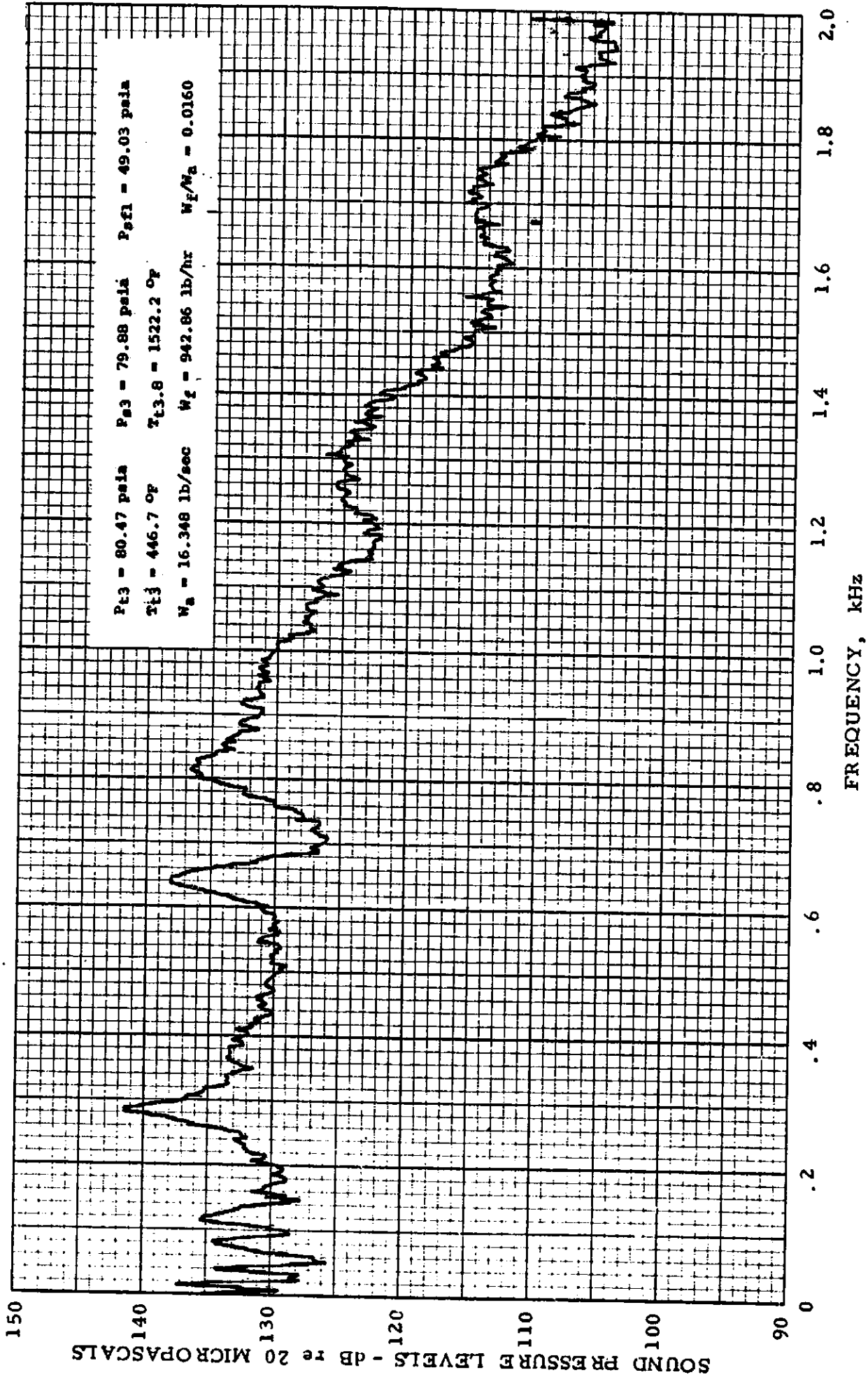
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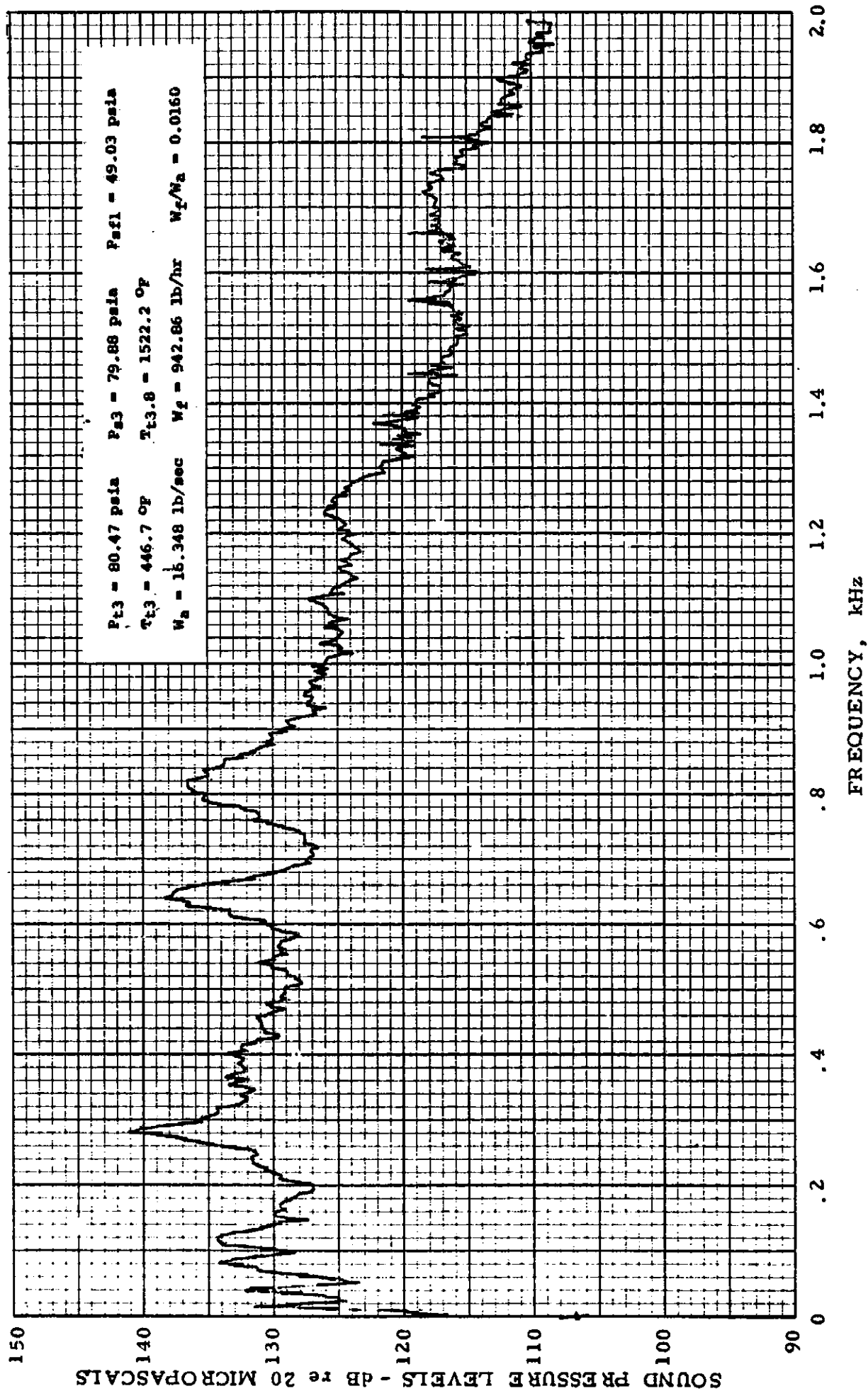
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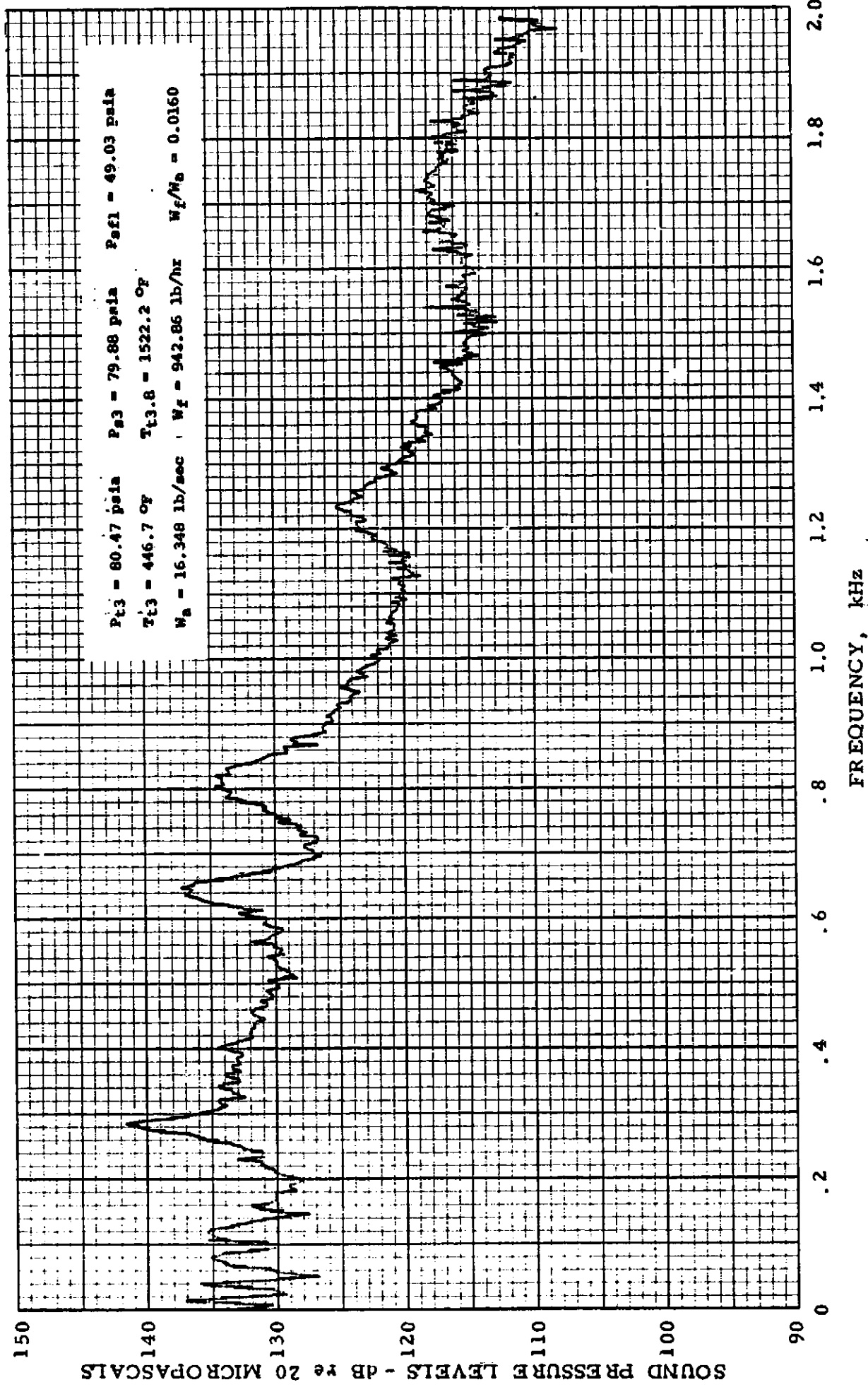
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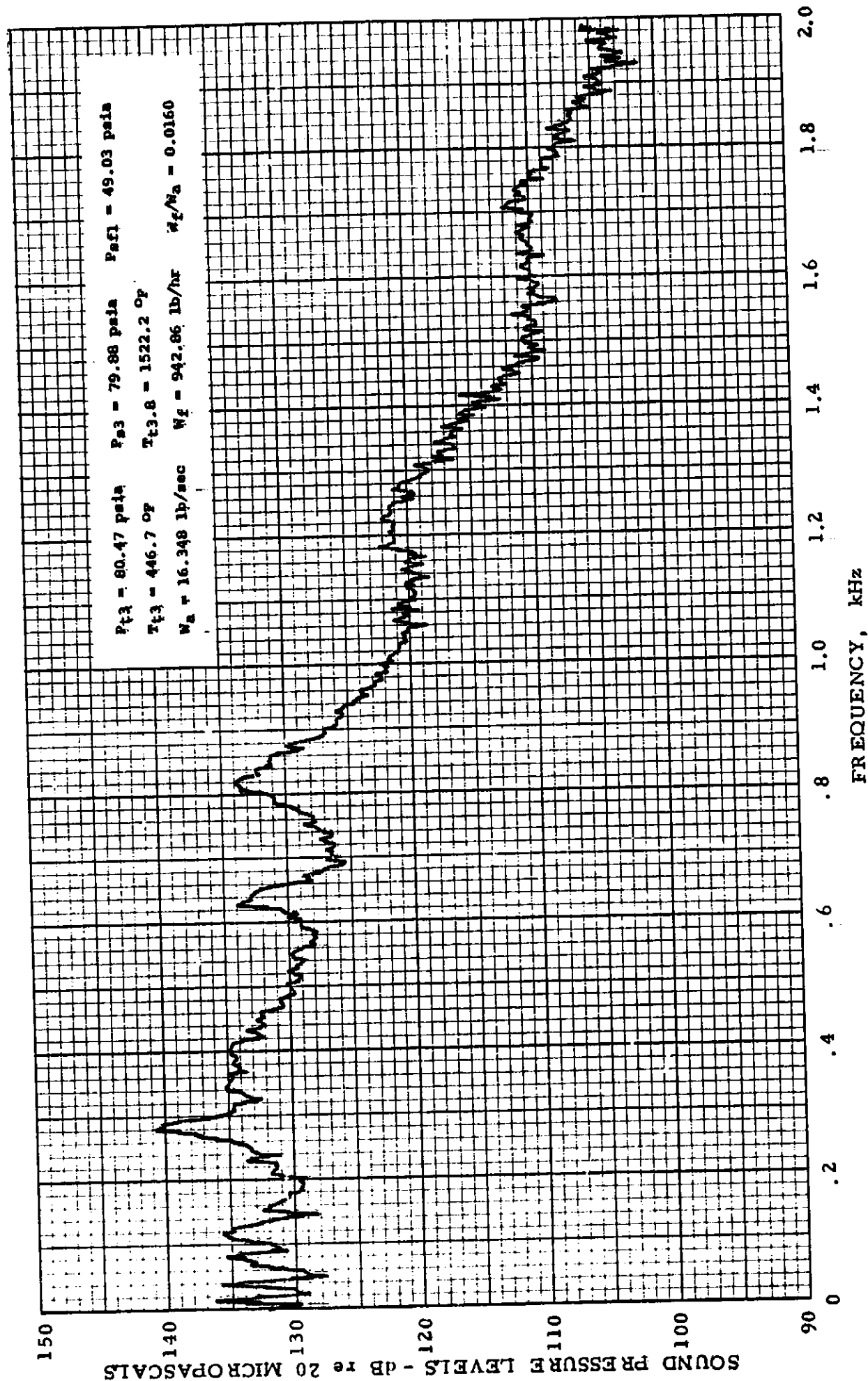
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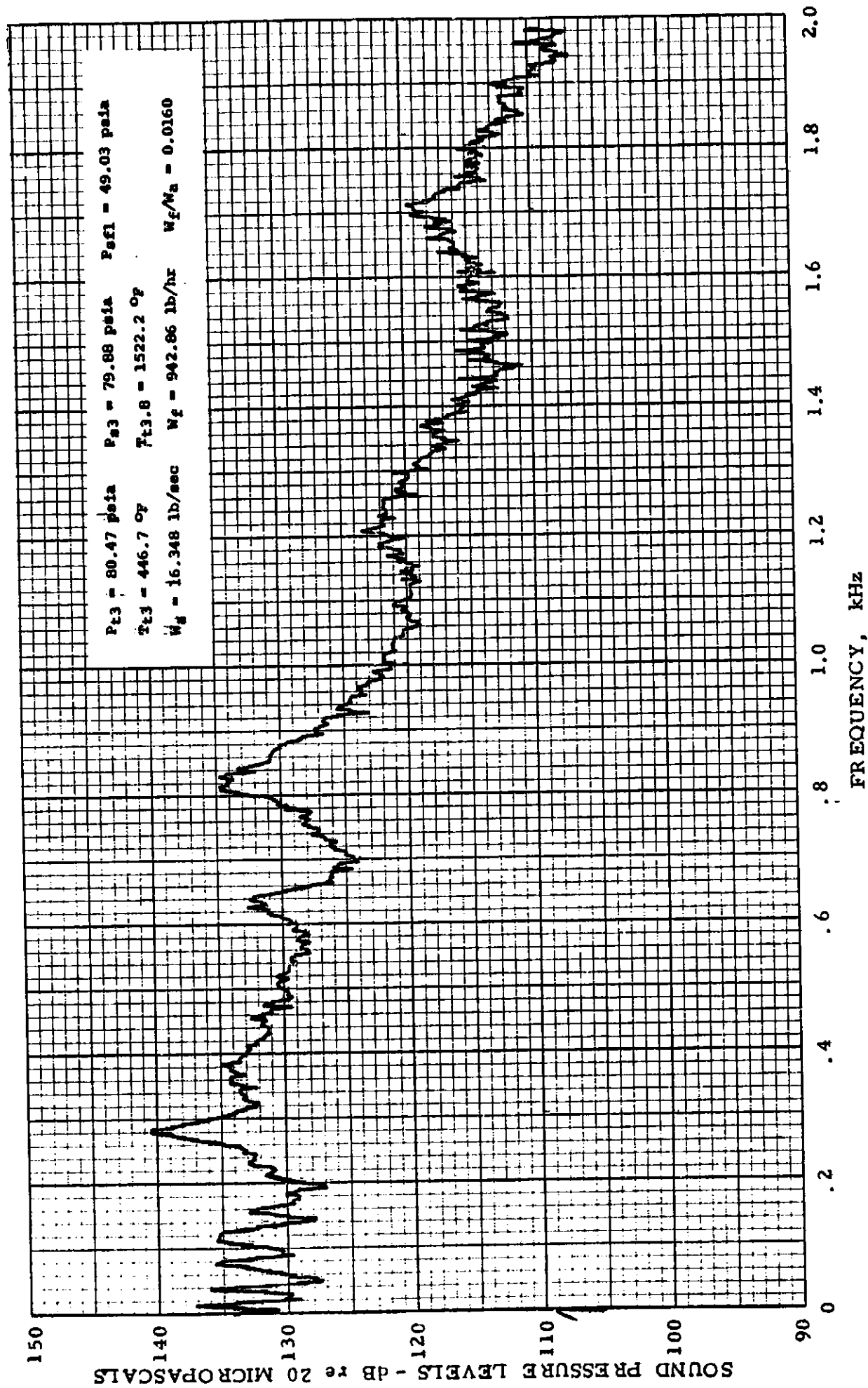
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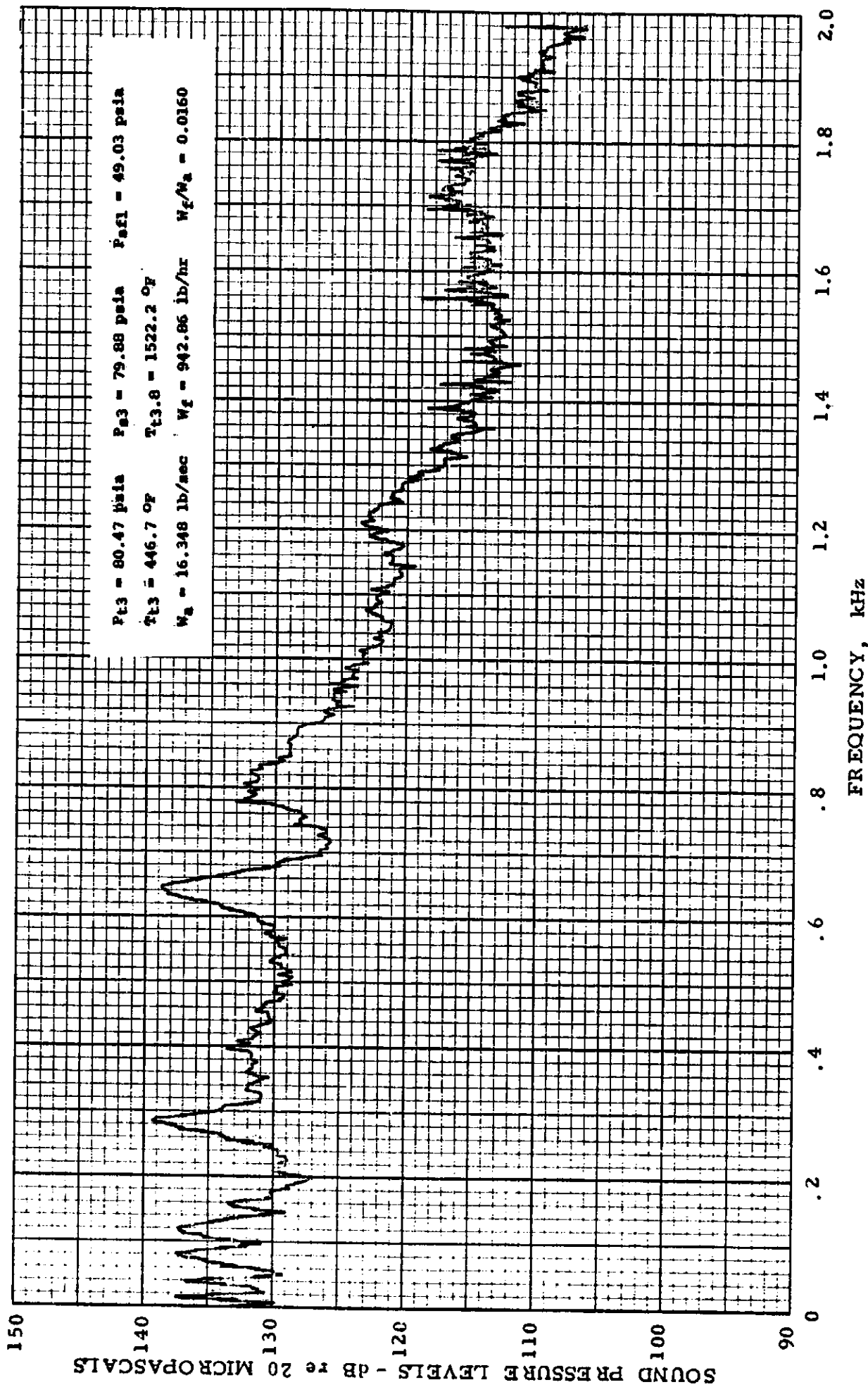
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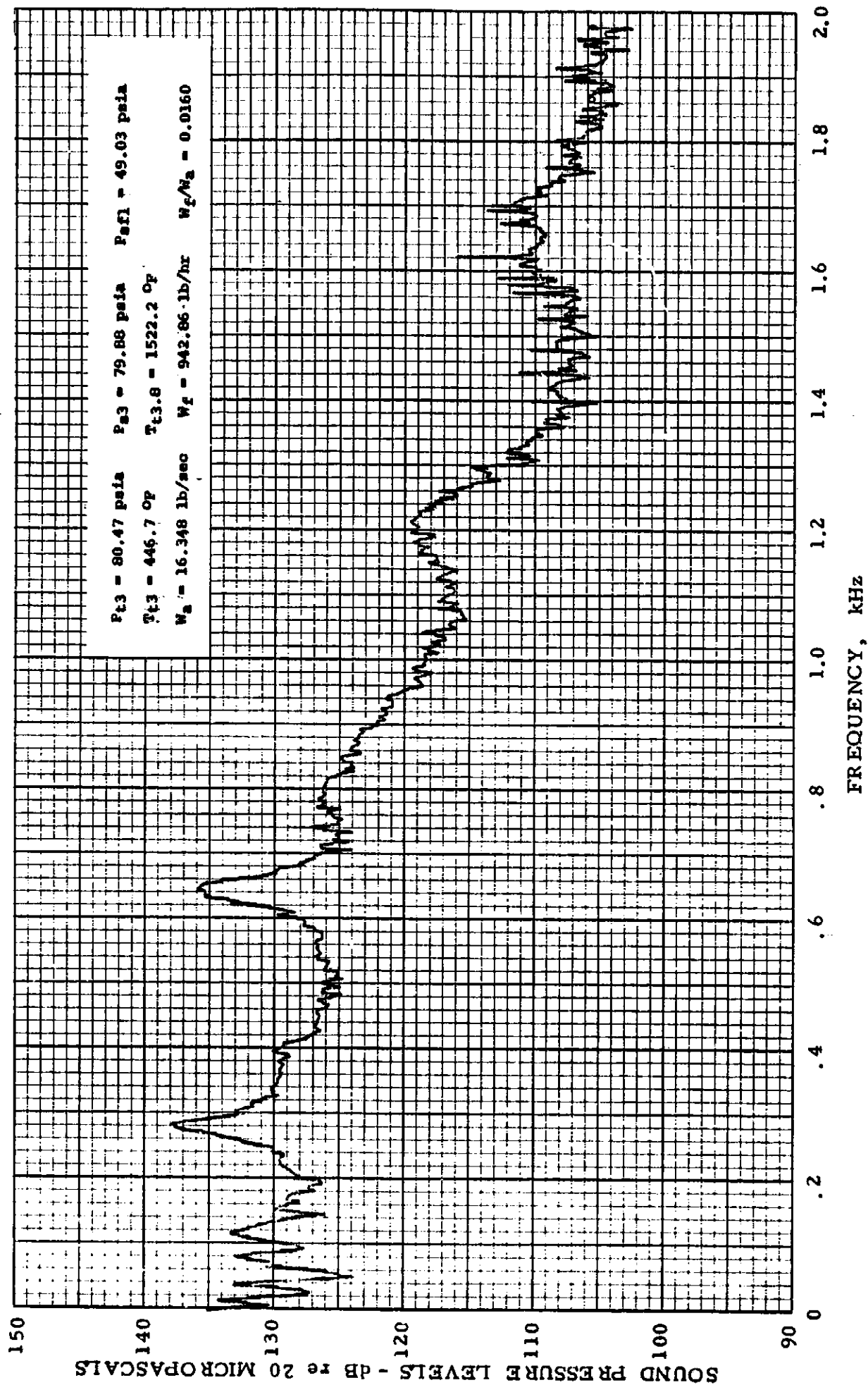
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NARROW BAND SPECTRUM AT PROBE NUMBER 7 DURING RUN POINT NUMBER 110



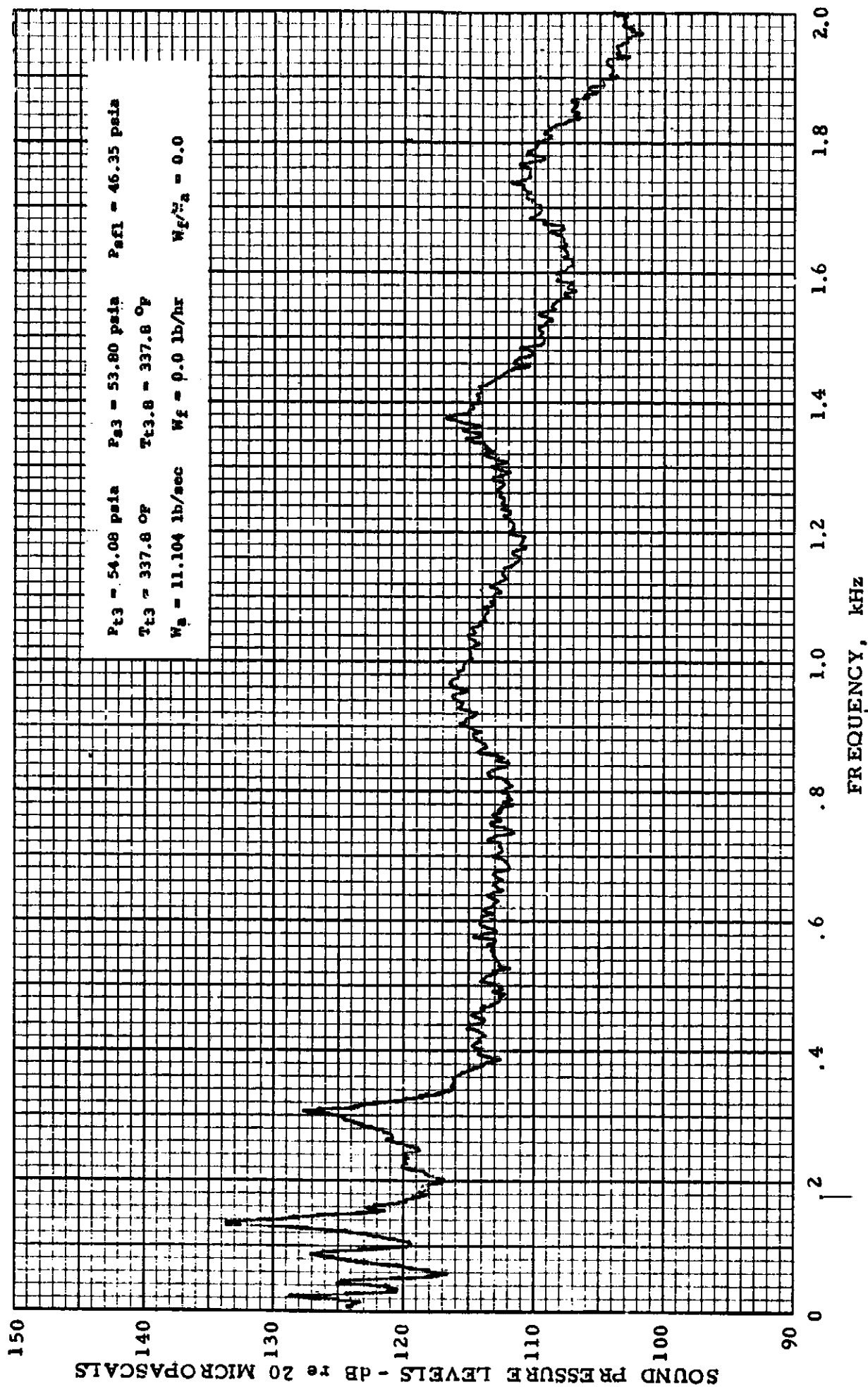
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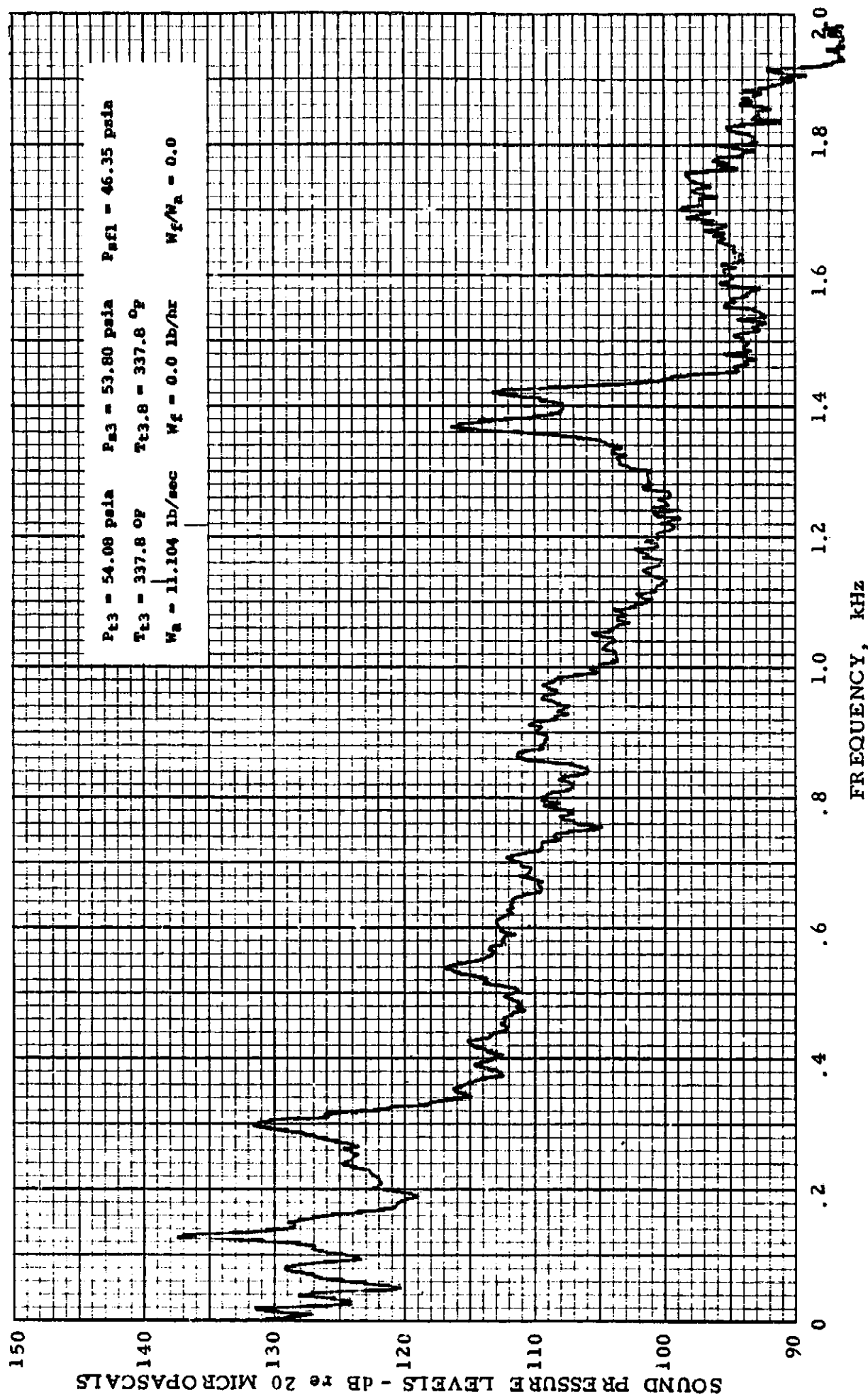
NARROW BAND SPECTRUM AT PROBE NUMBER 9 DURING RUN POINT NUMBER 110

APPENDIX C

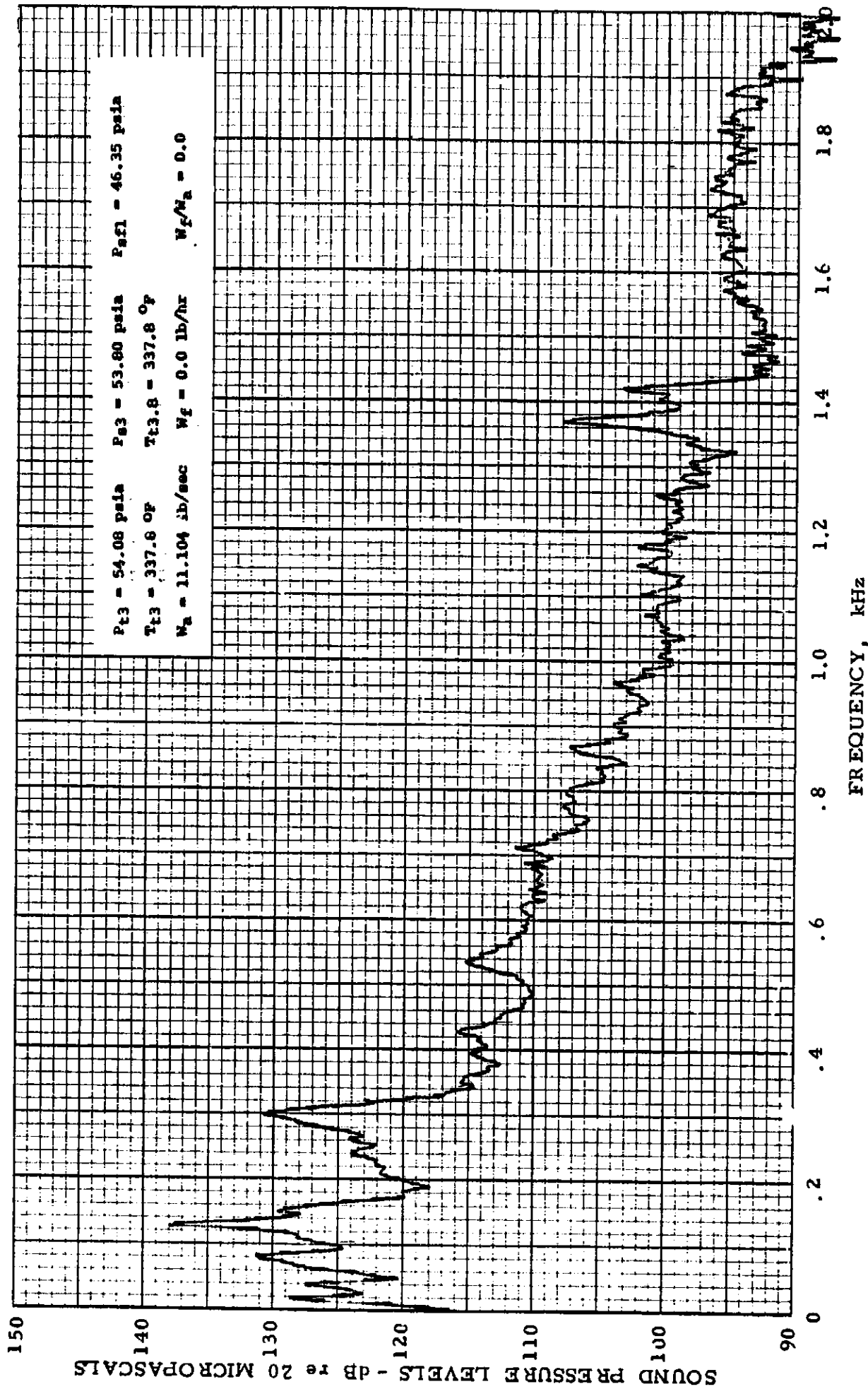
GROUP II



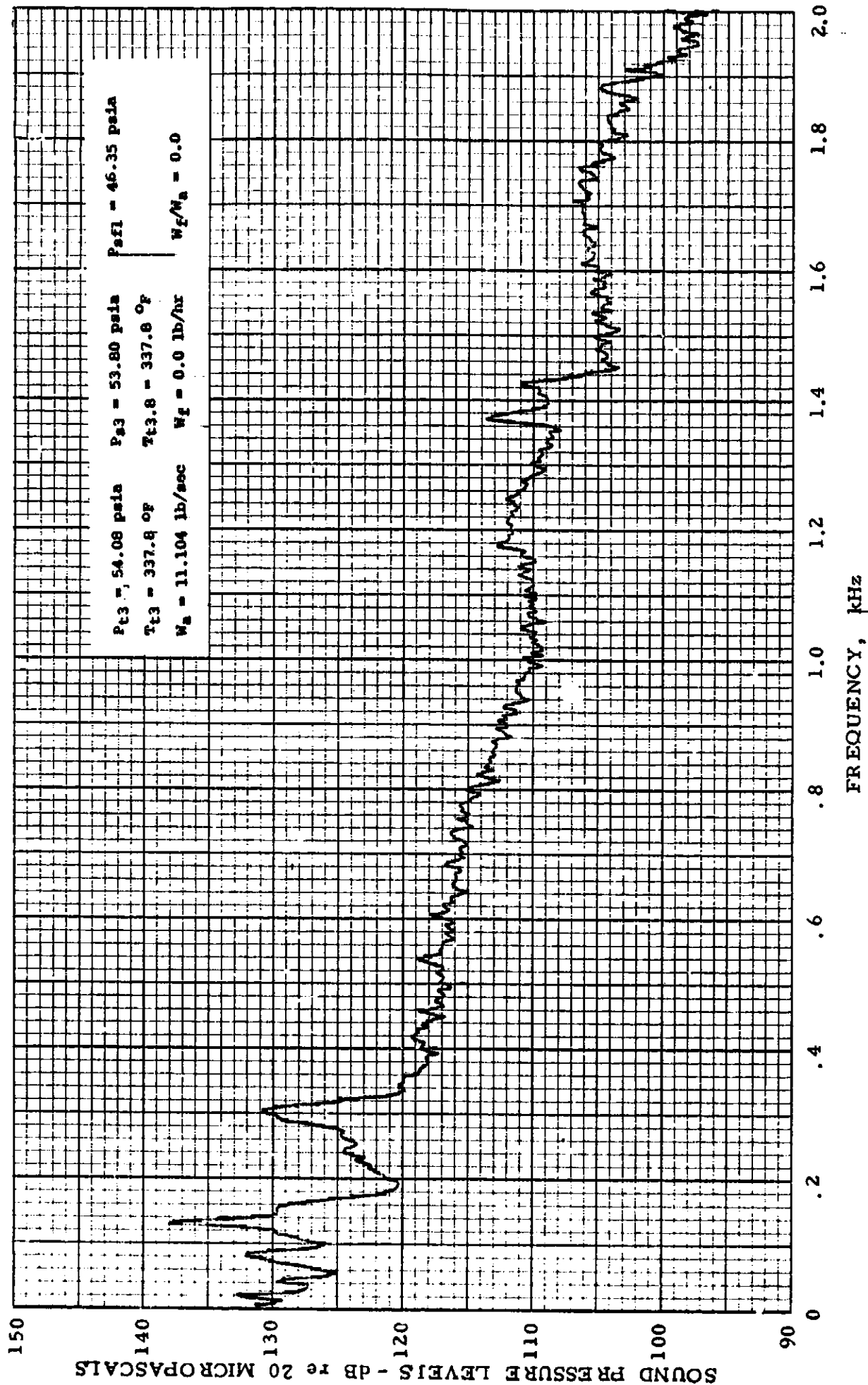
NARROW BAND SPECTRUM AT PROBE NUMBER 1 DURING RUN POINT NUMBERS 105



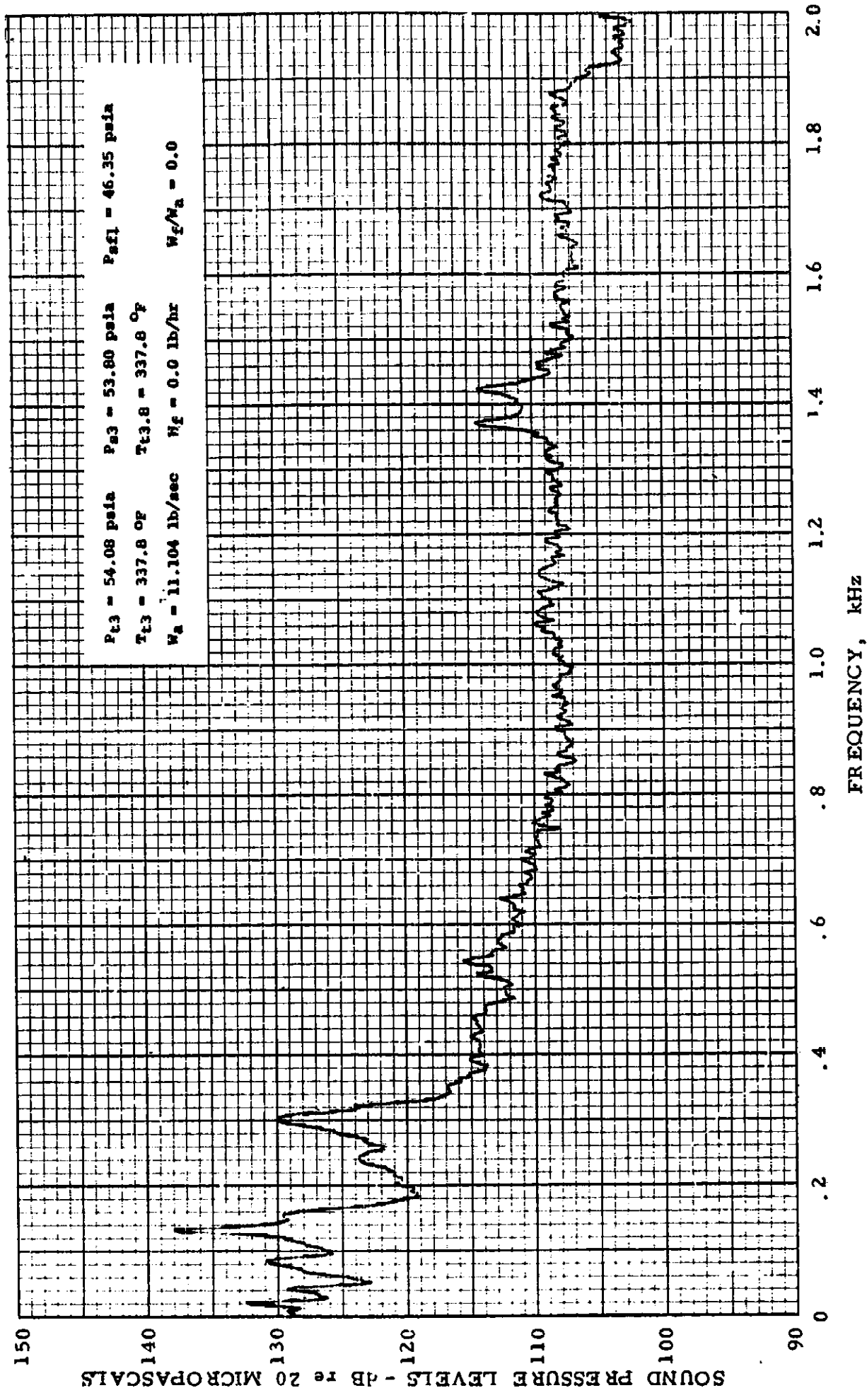
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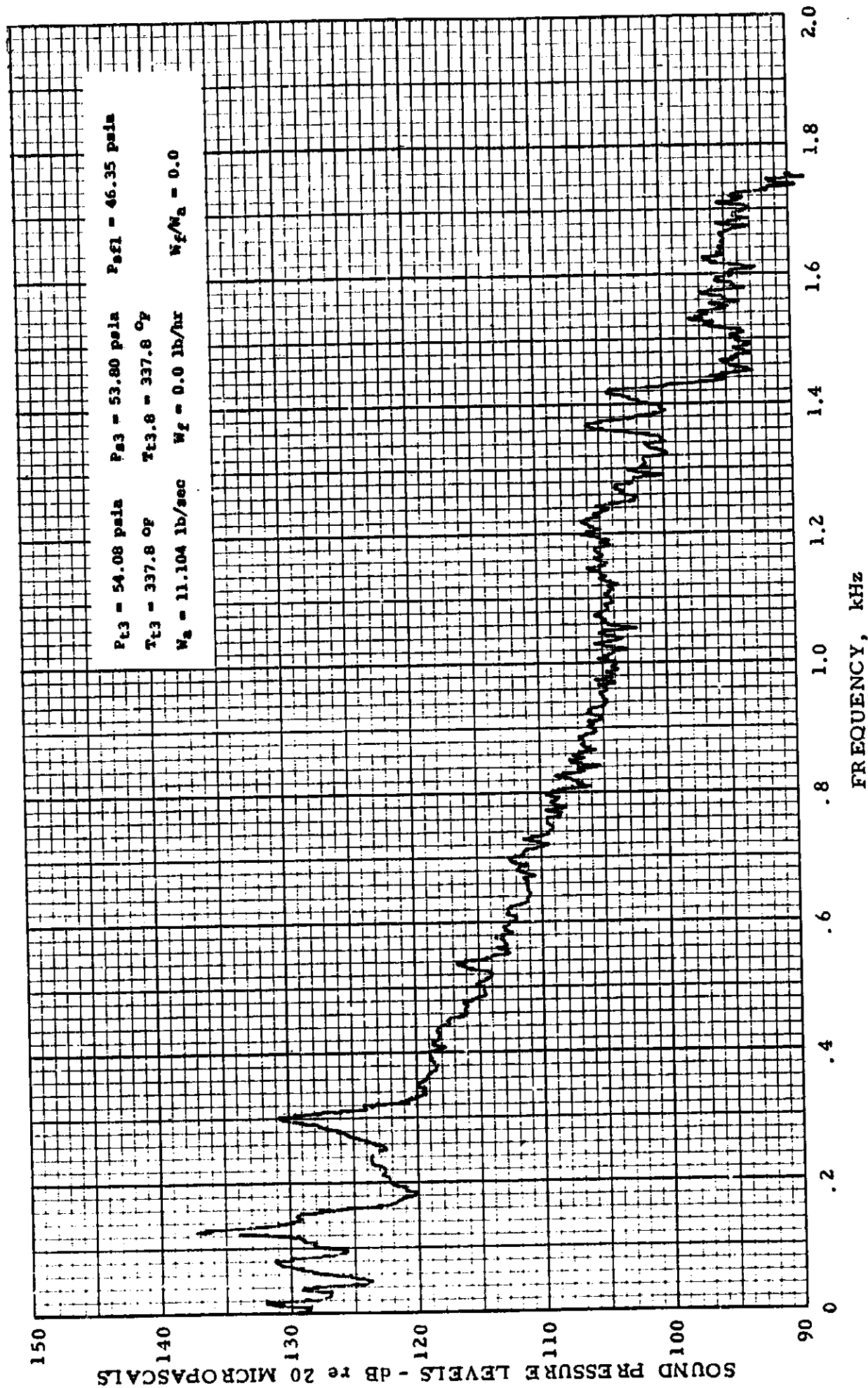
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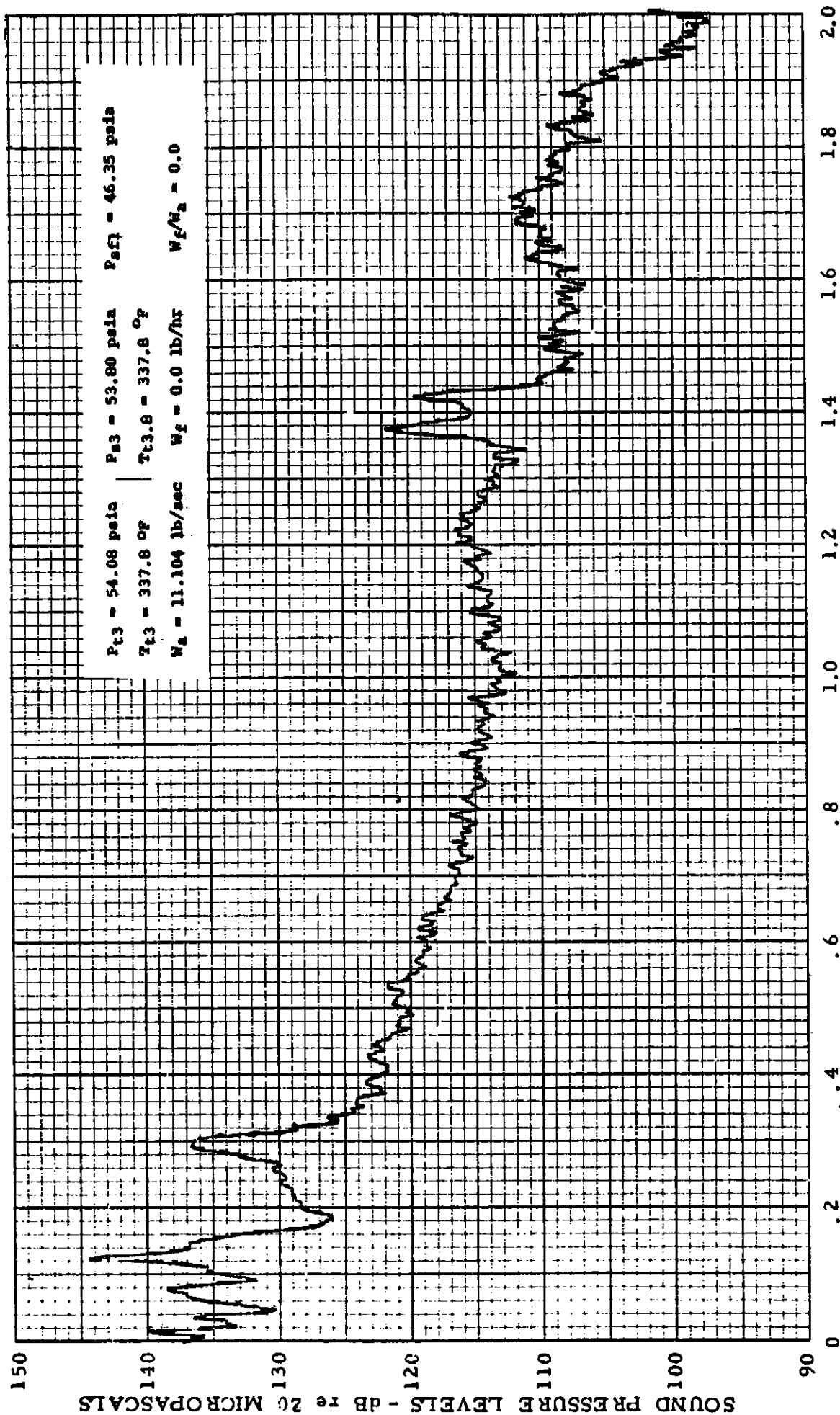
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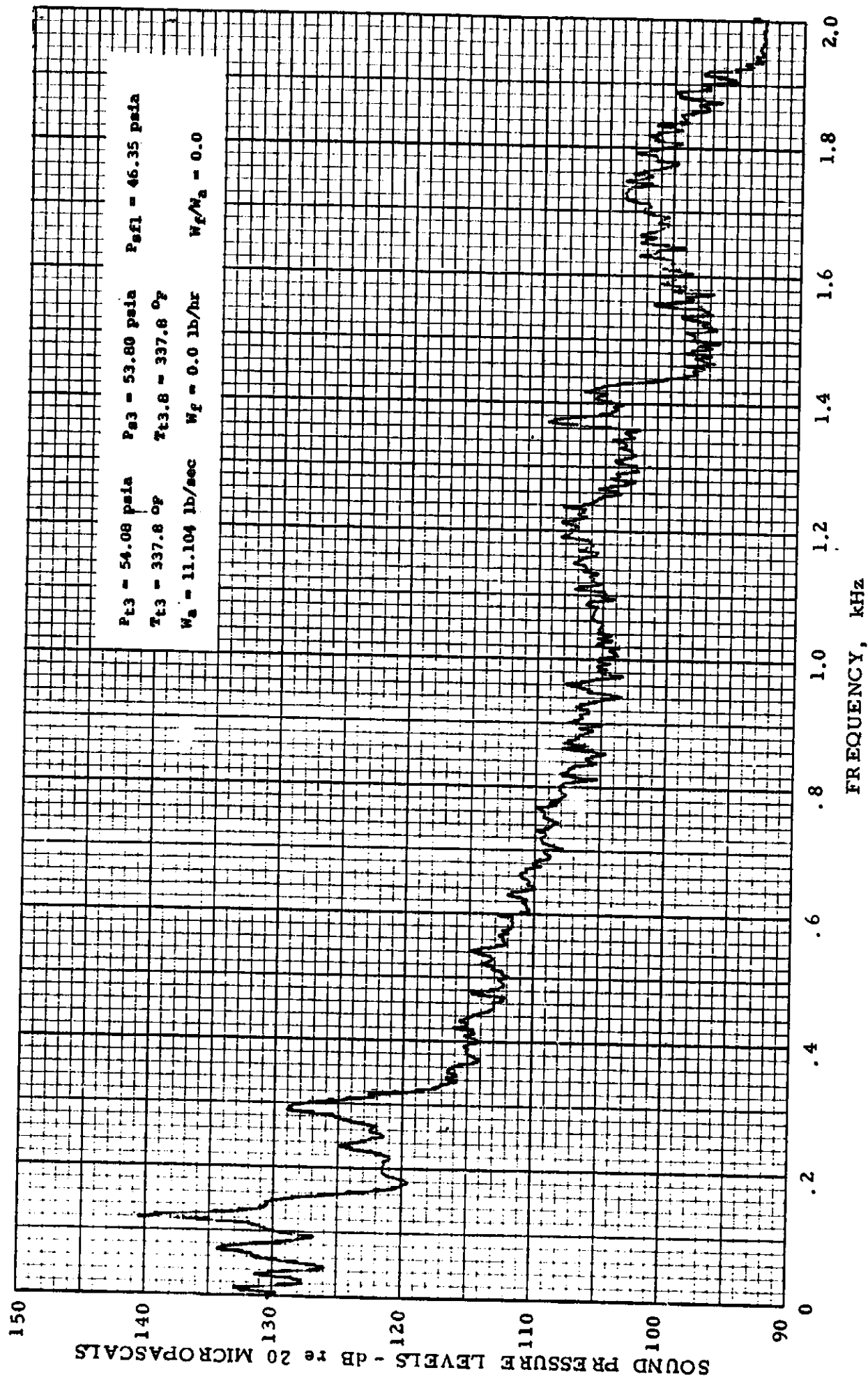
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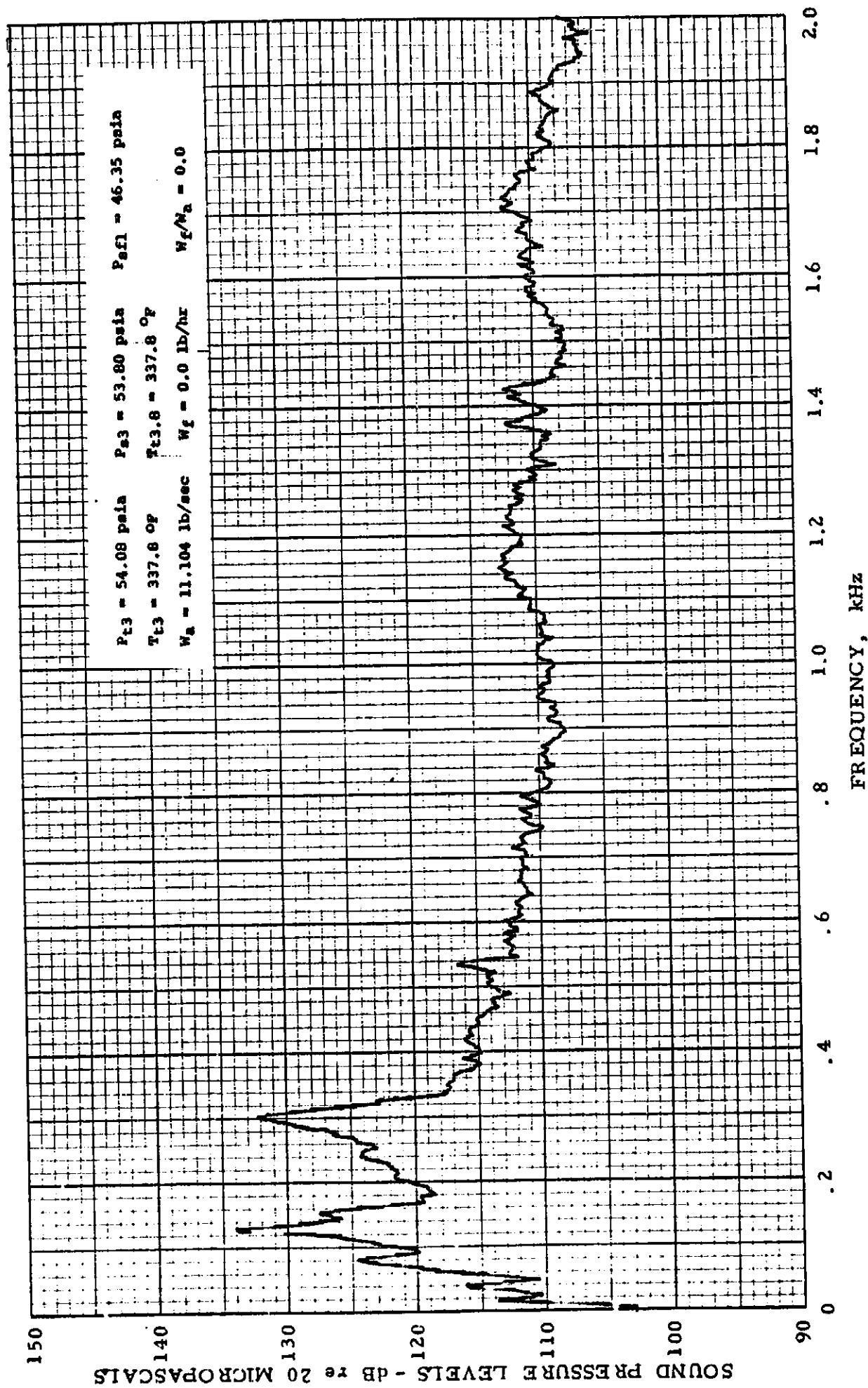
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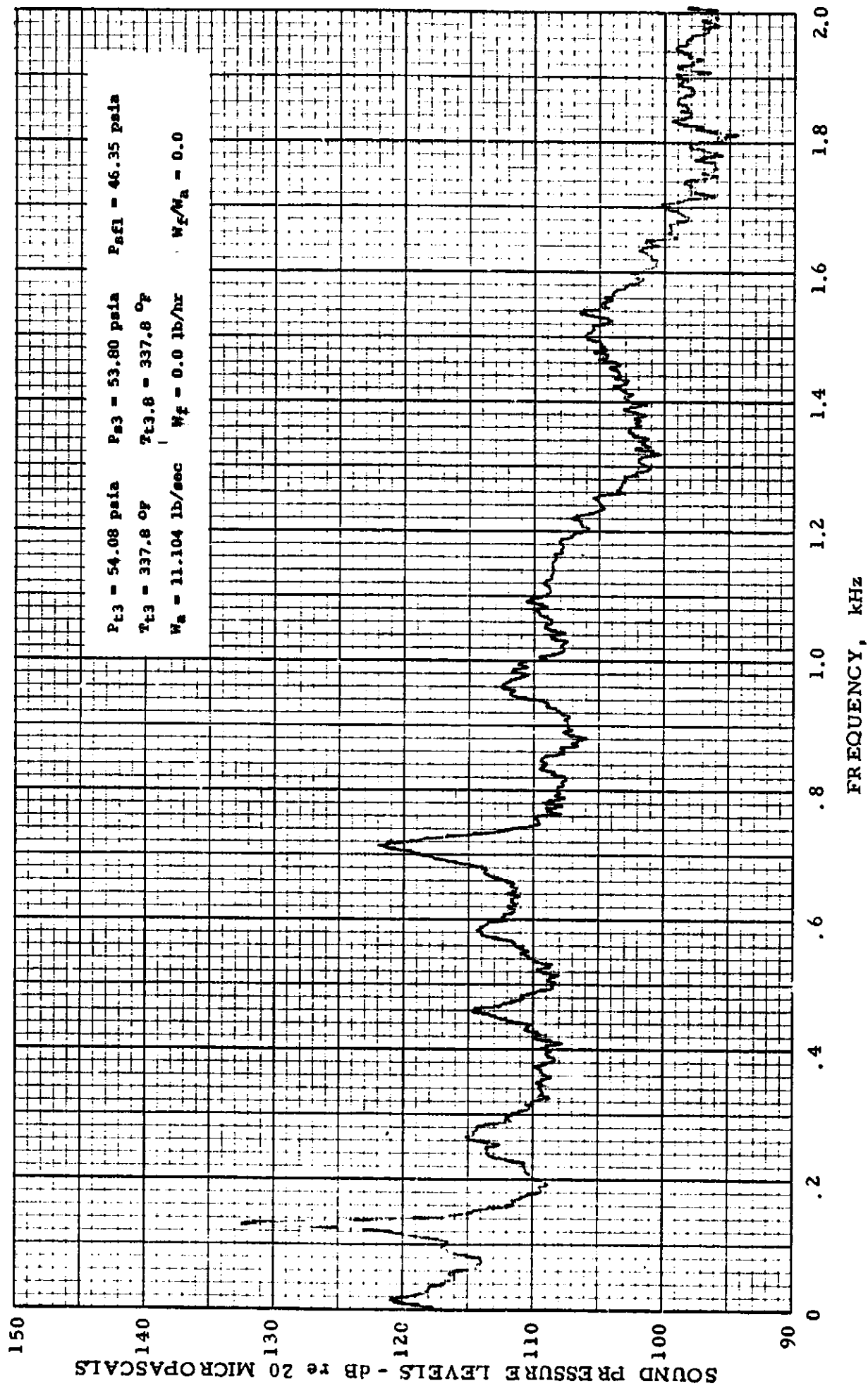
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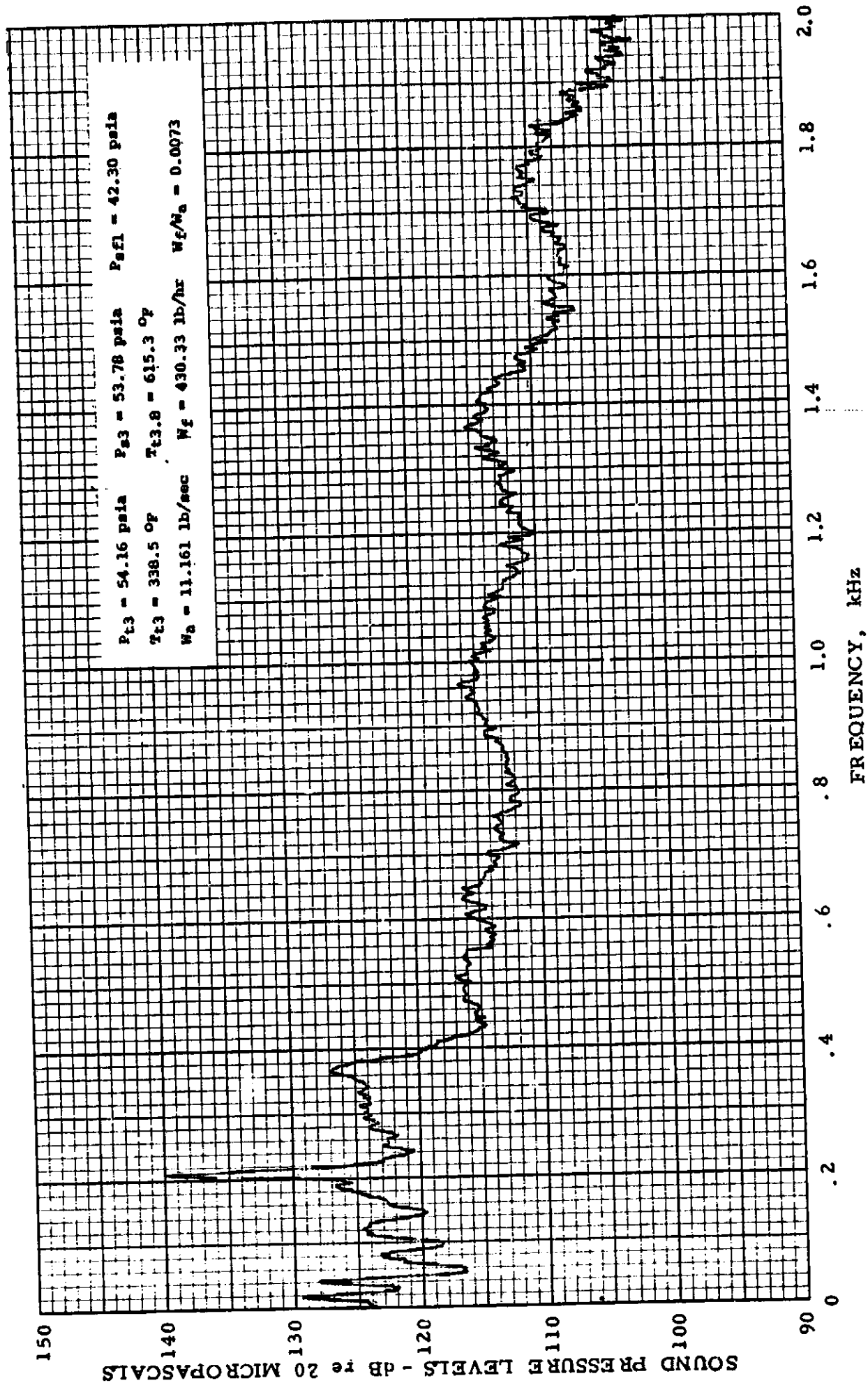
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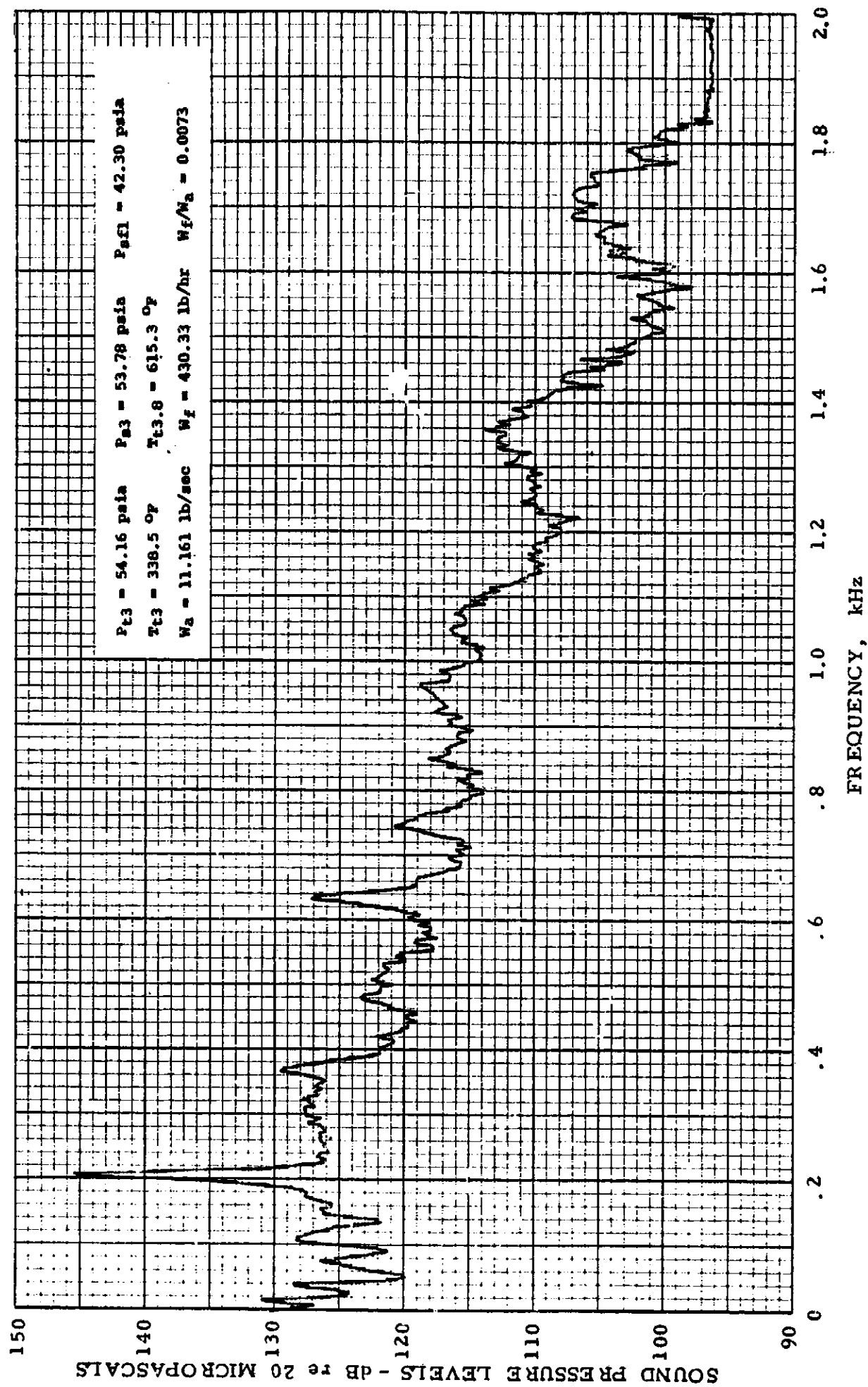
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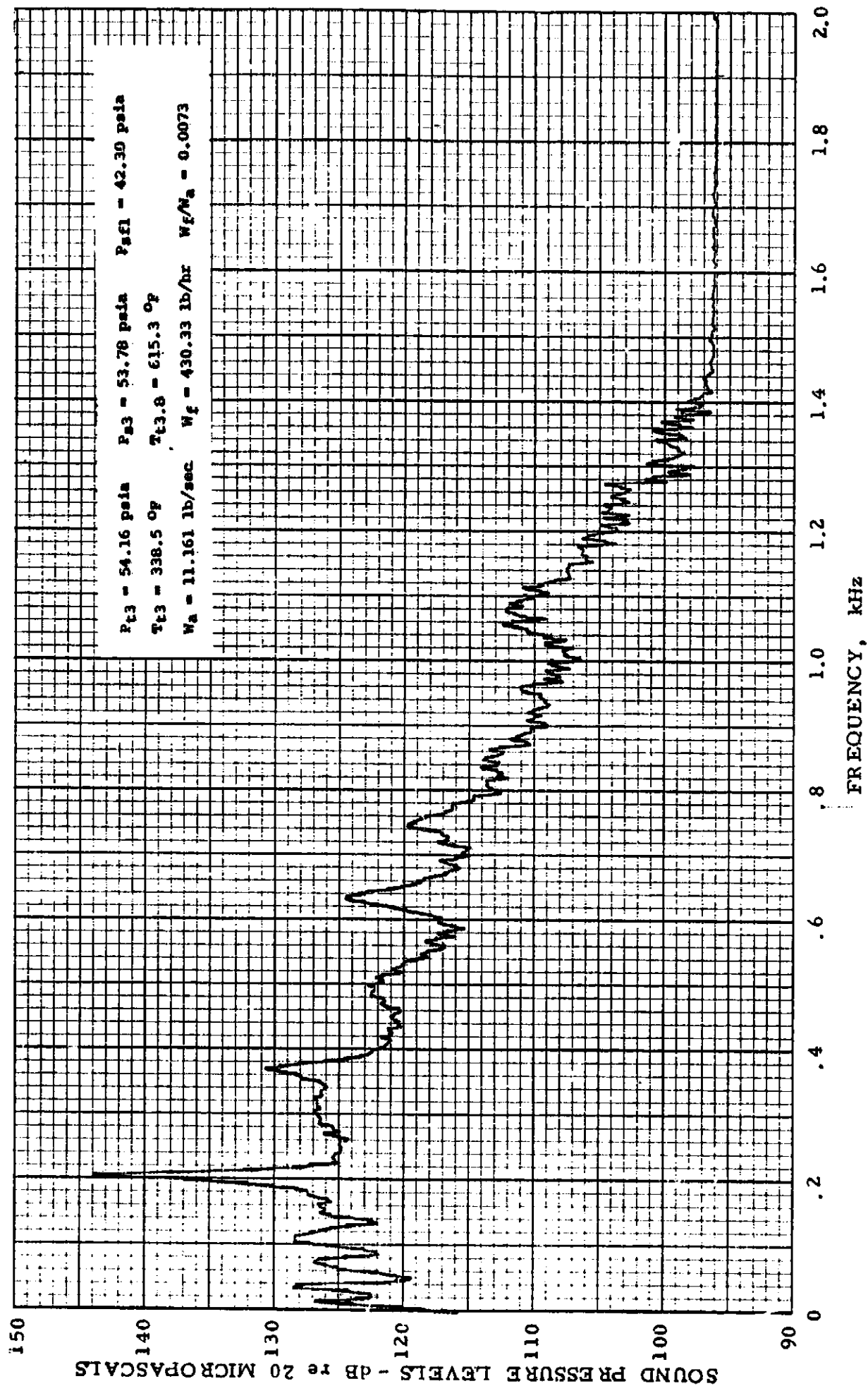
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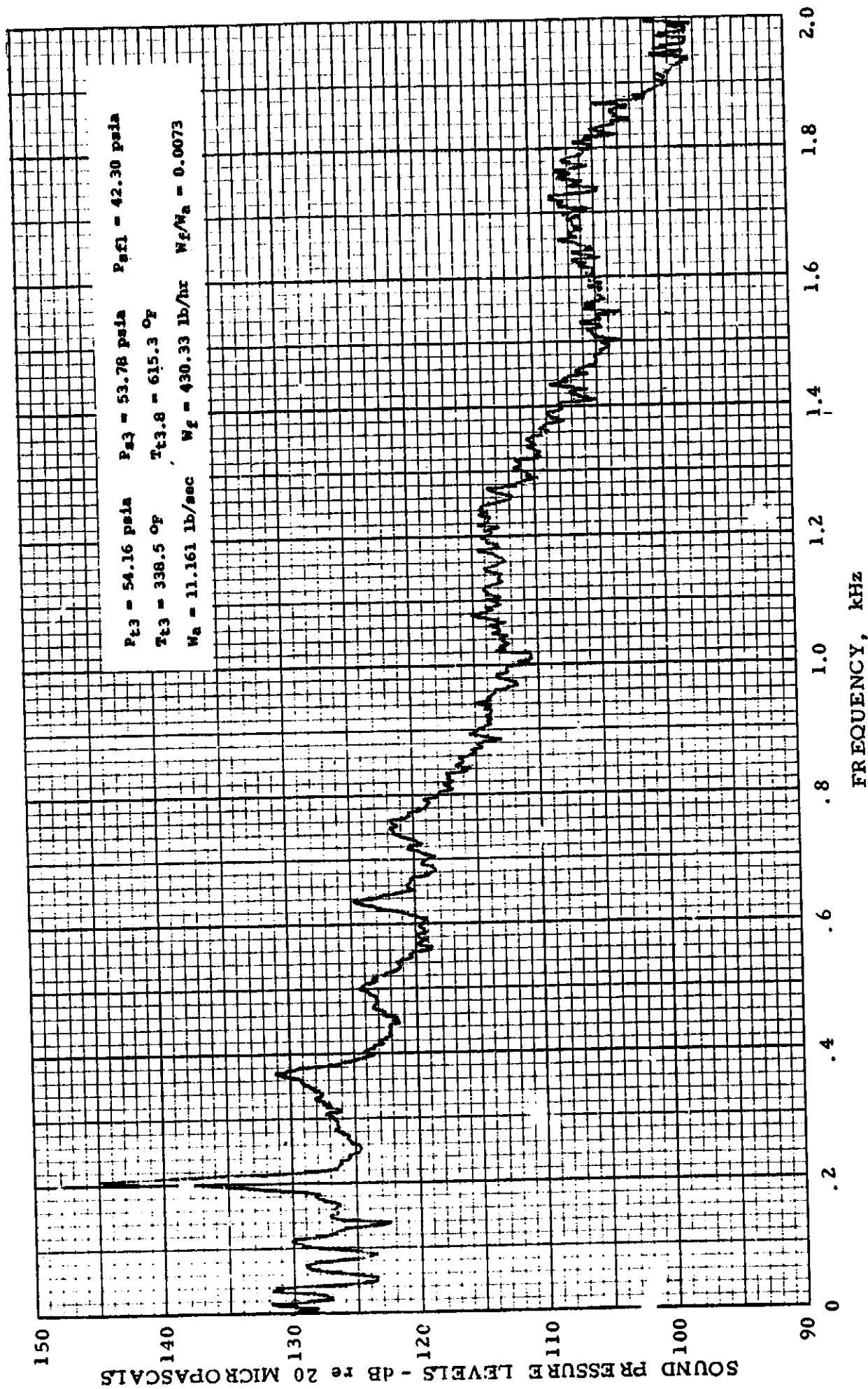
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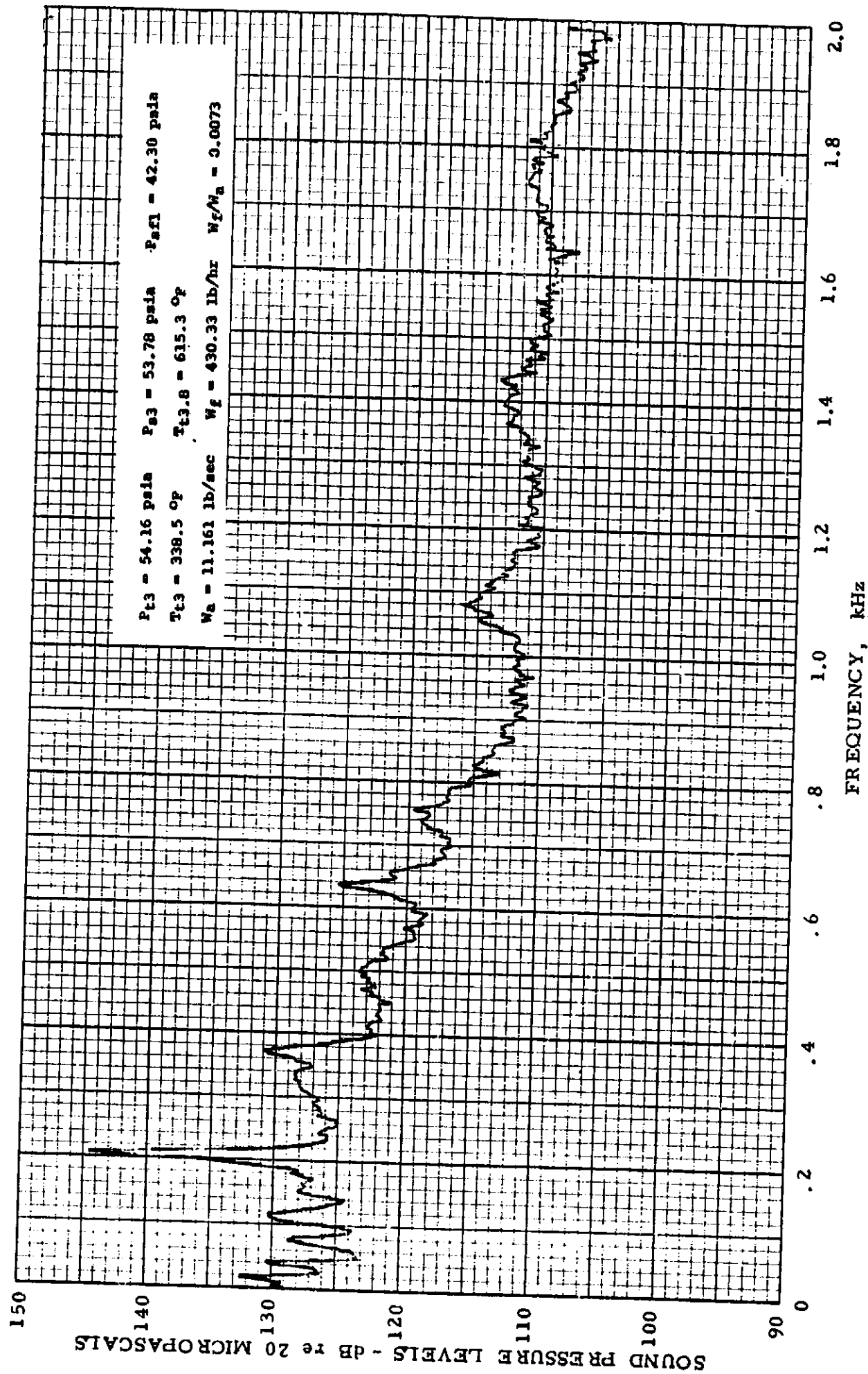
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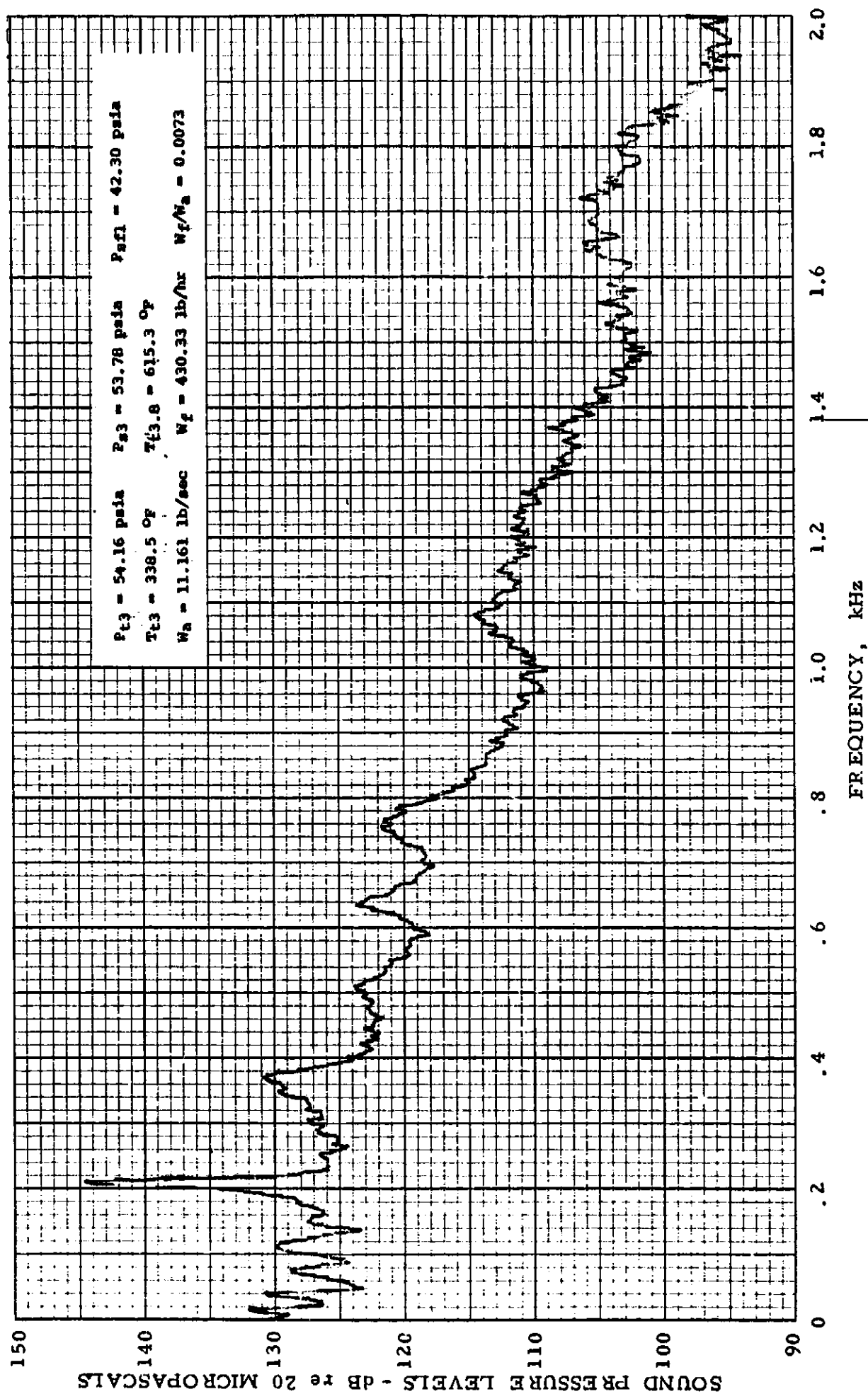
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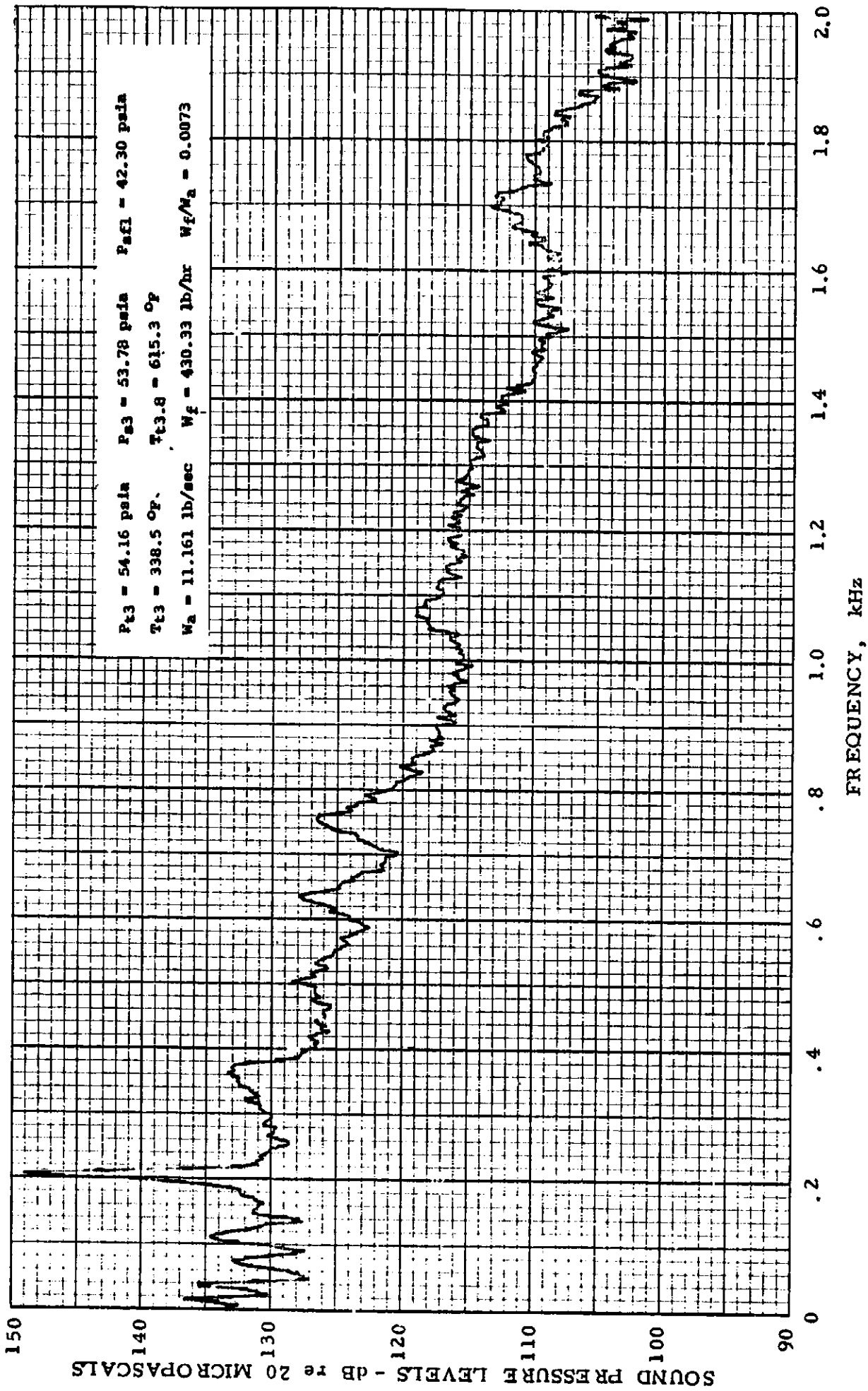
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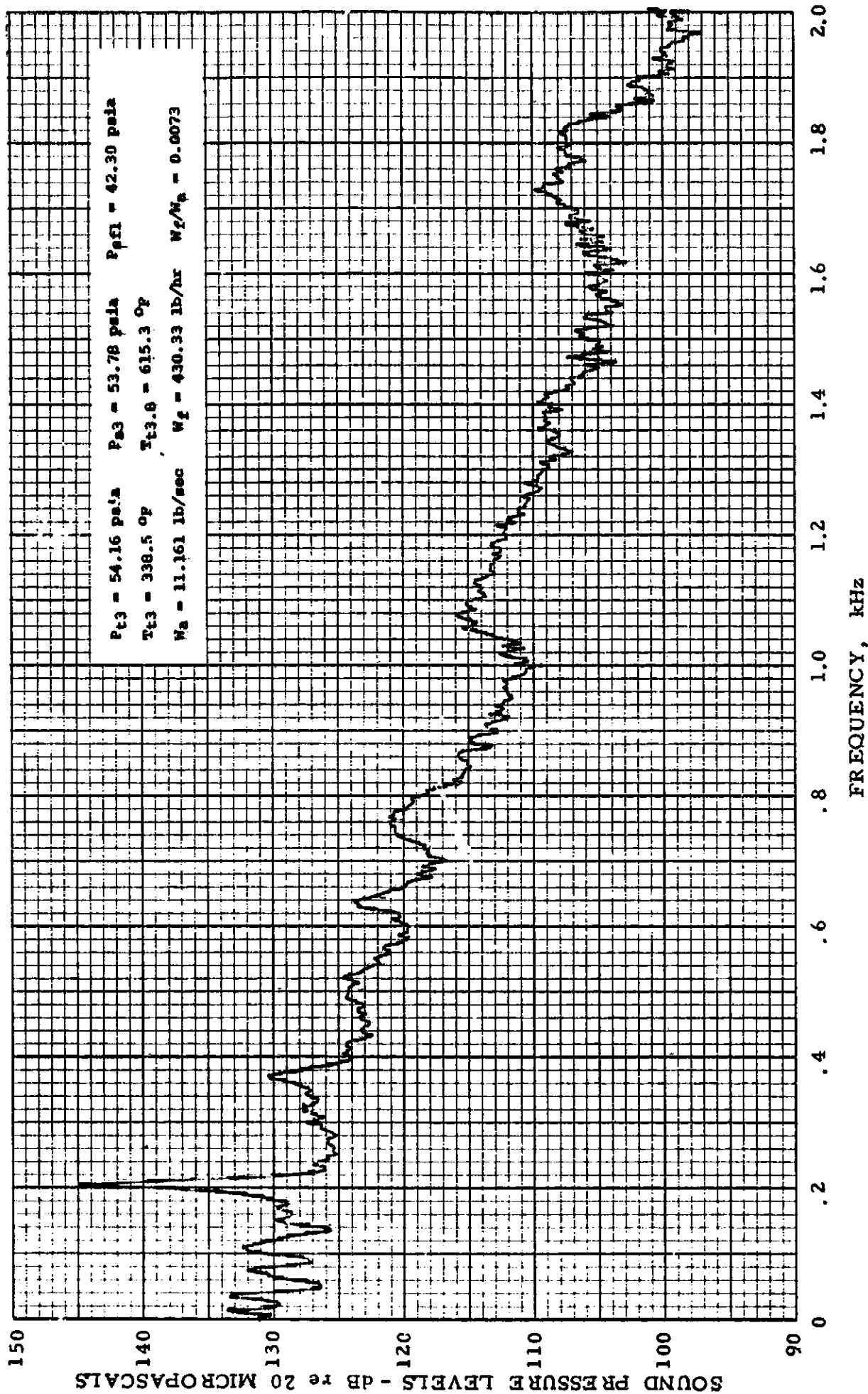
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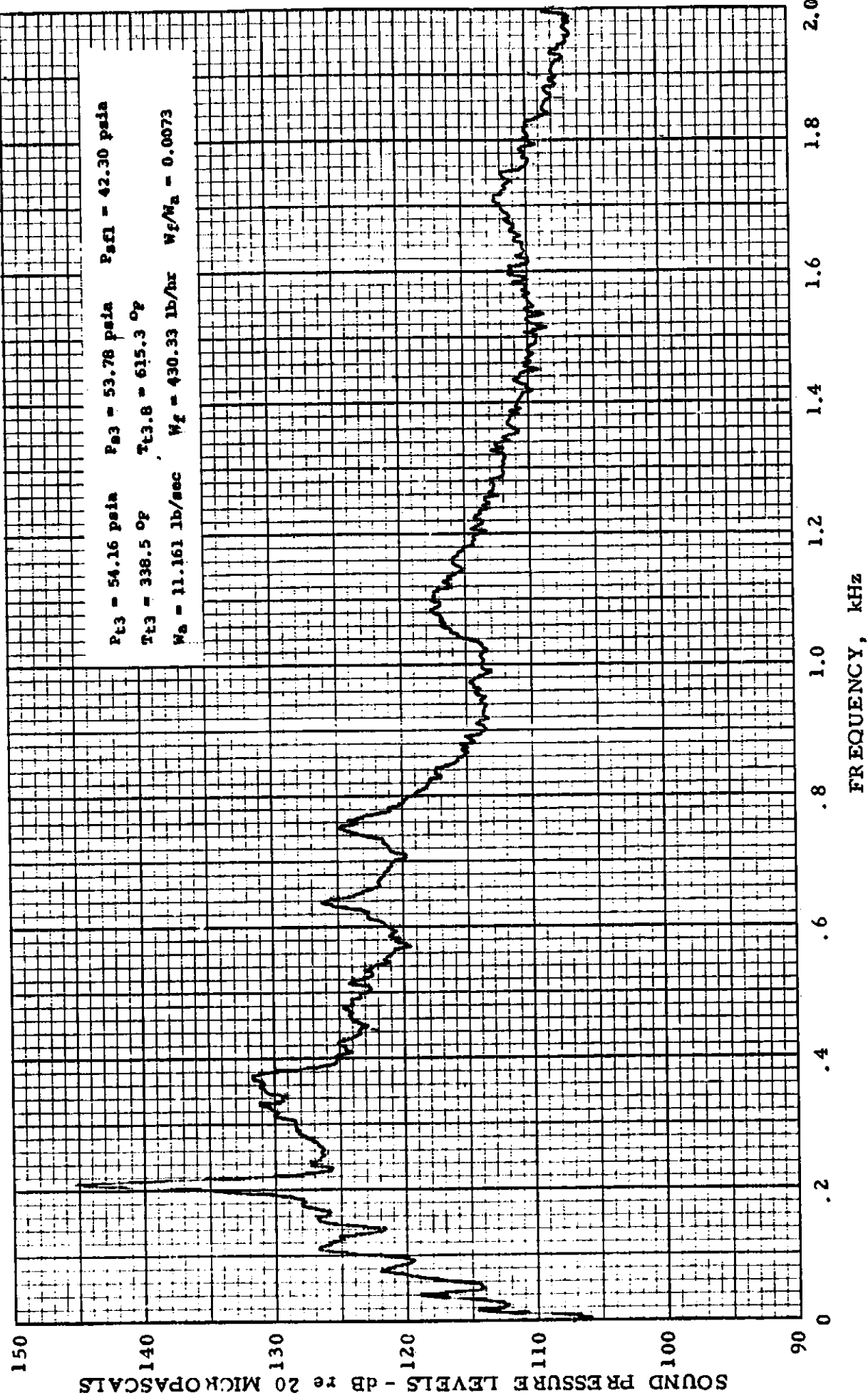
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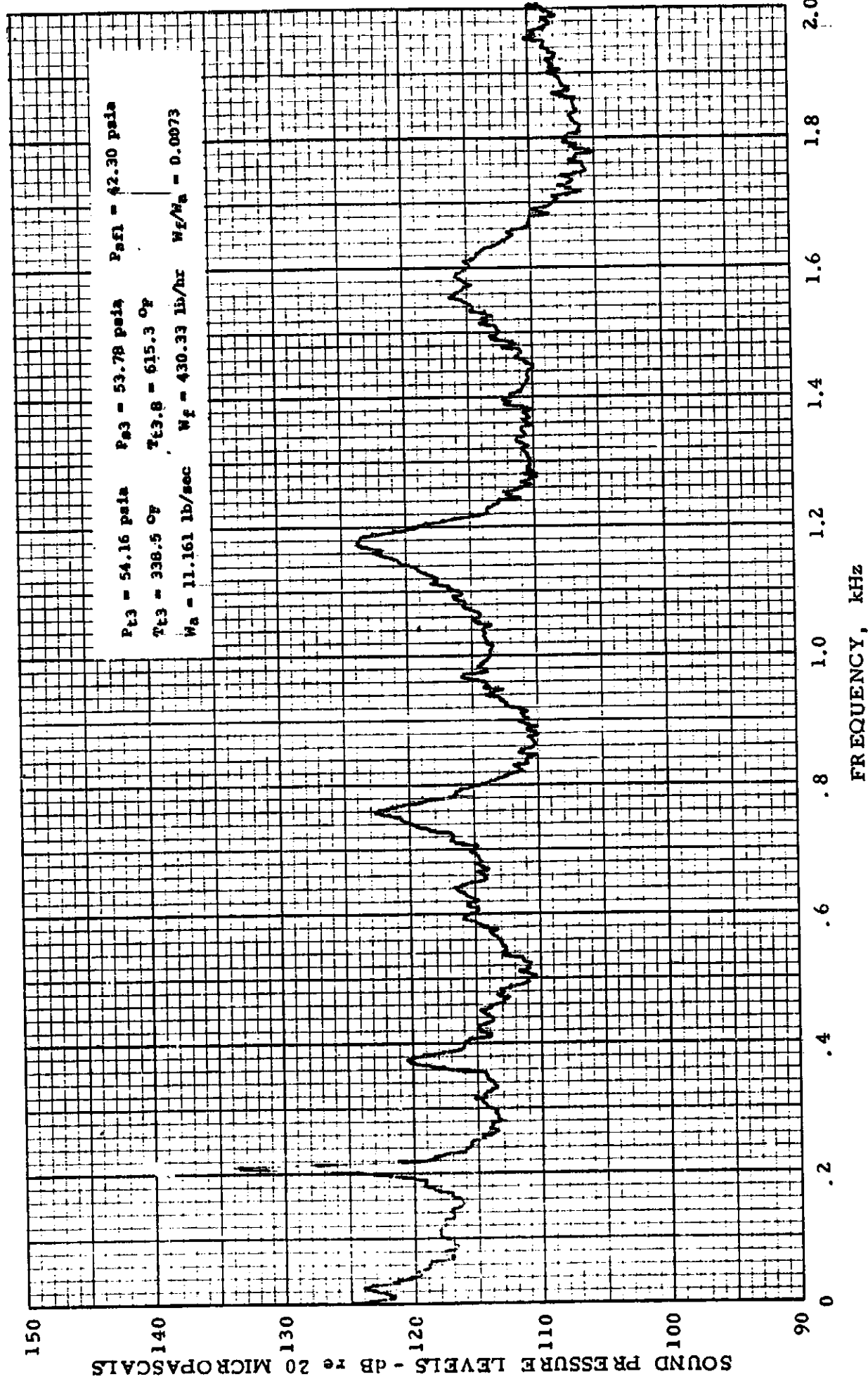
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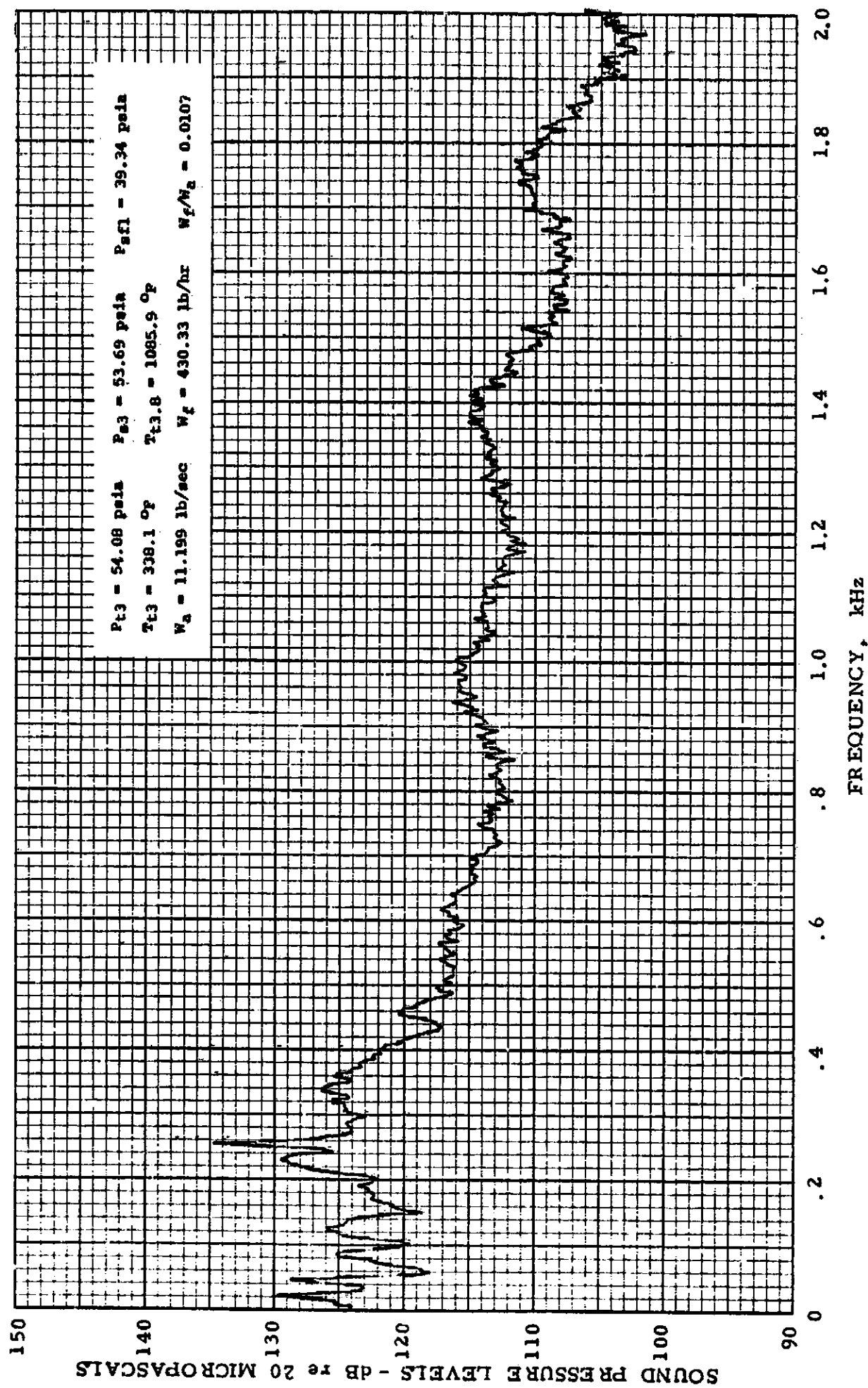
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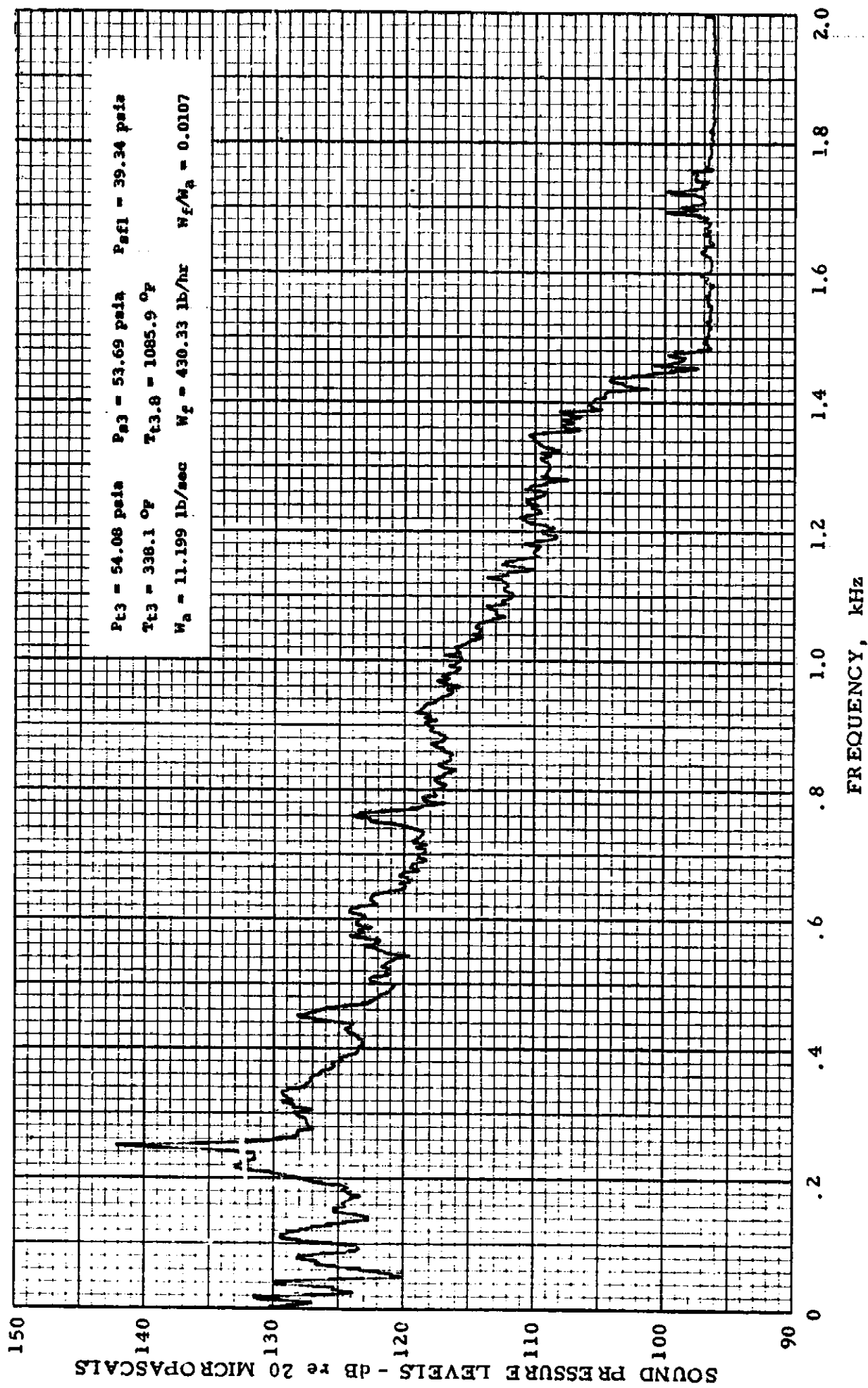
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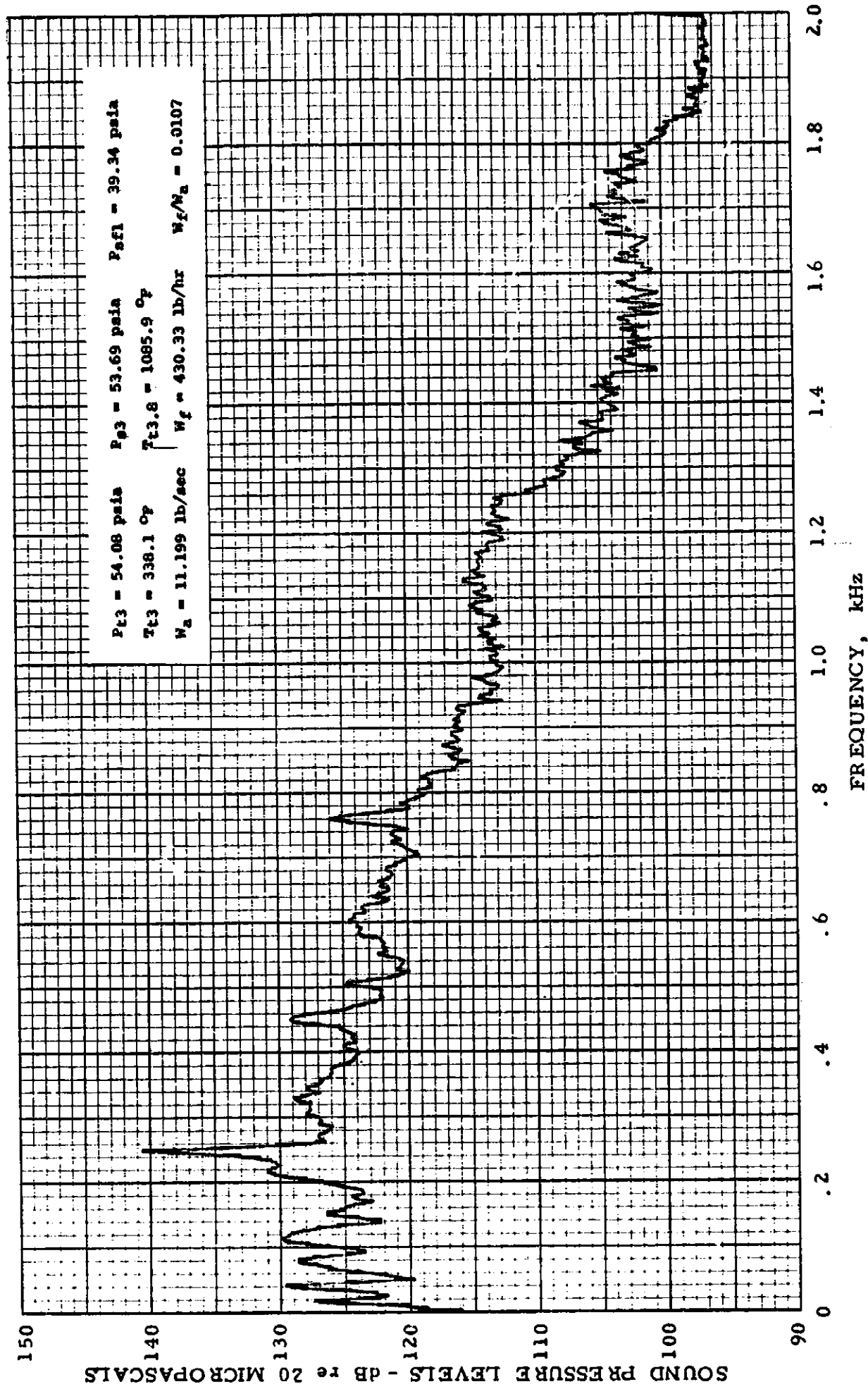
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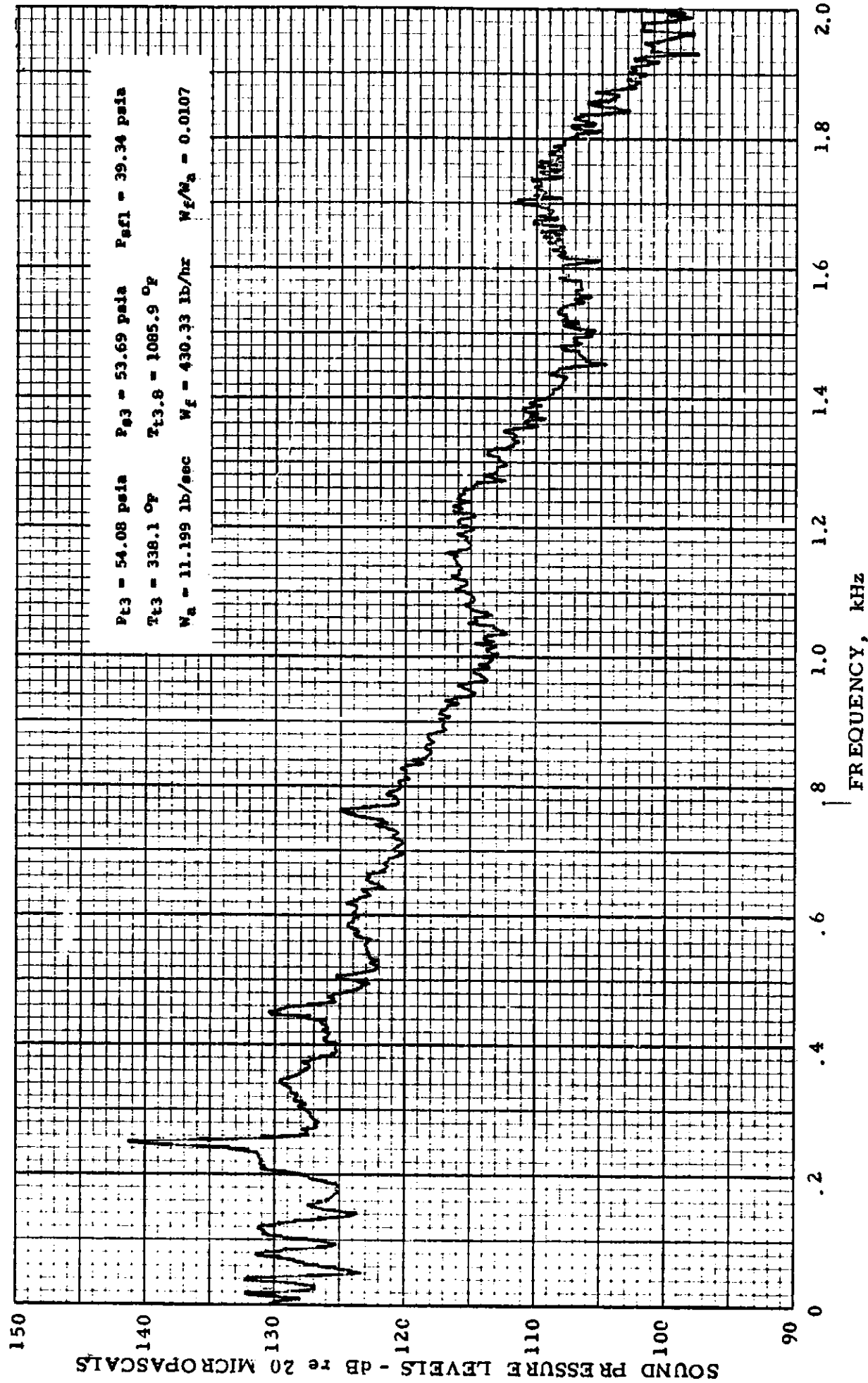
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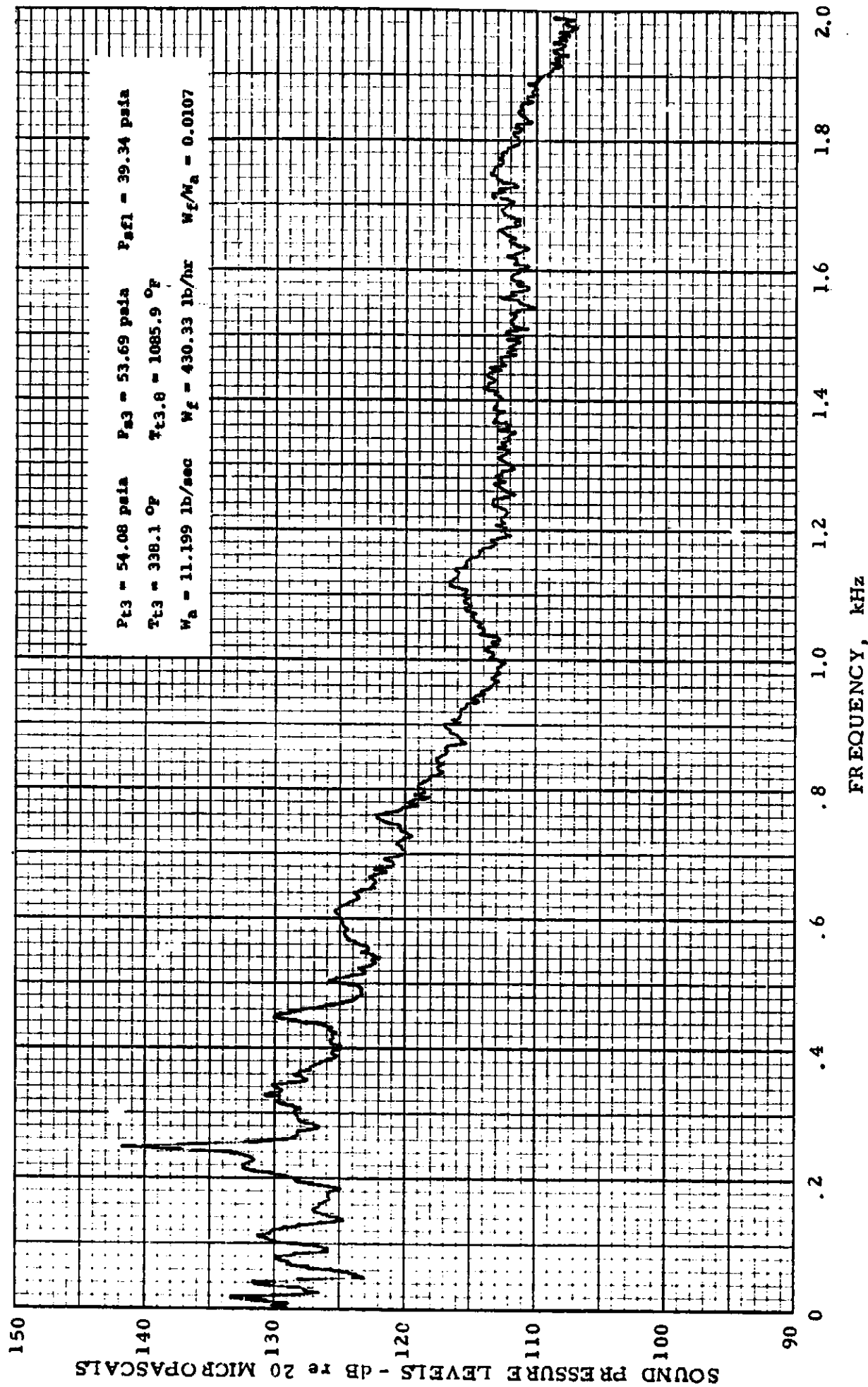
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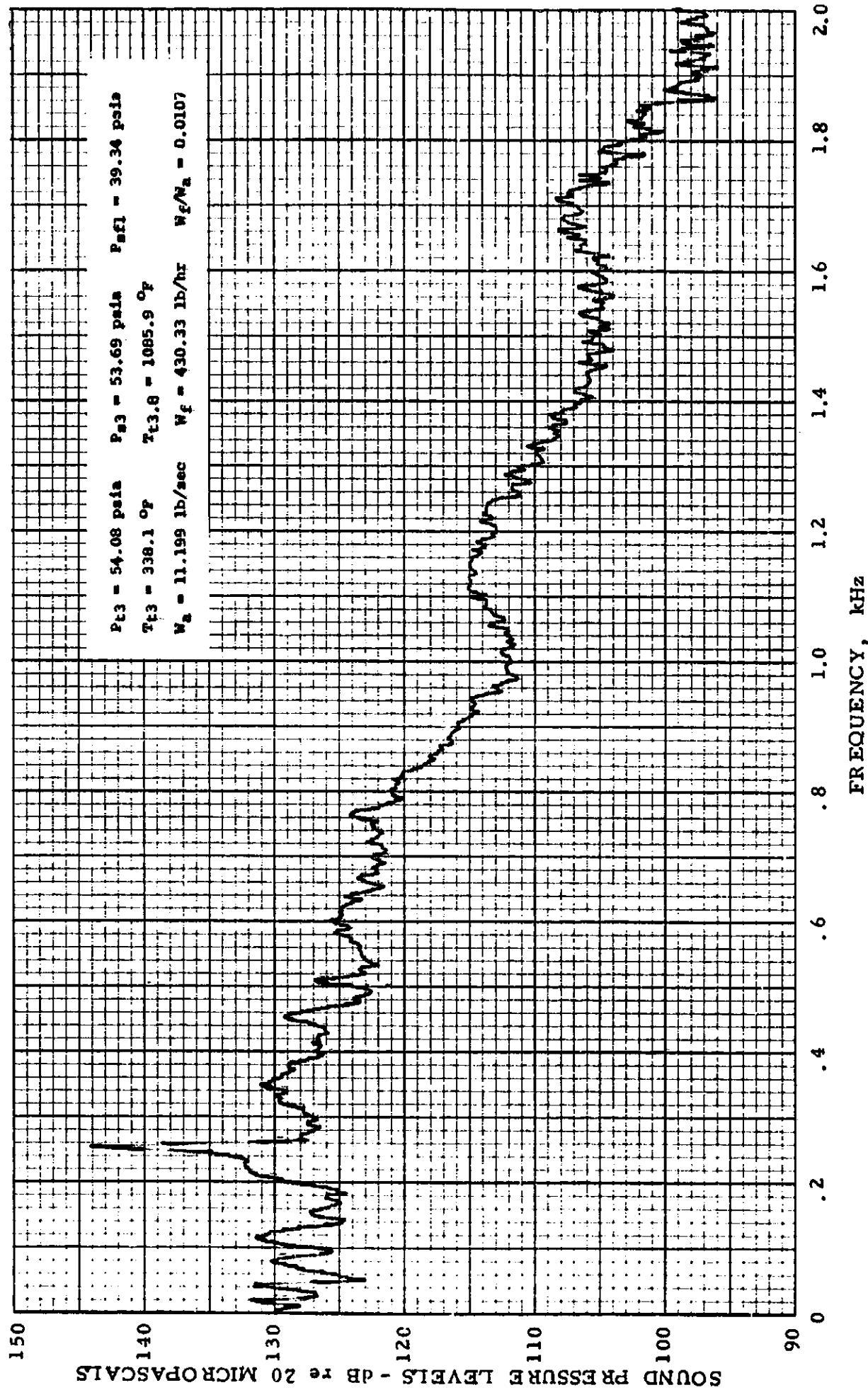
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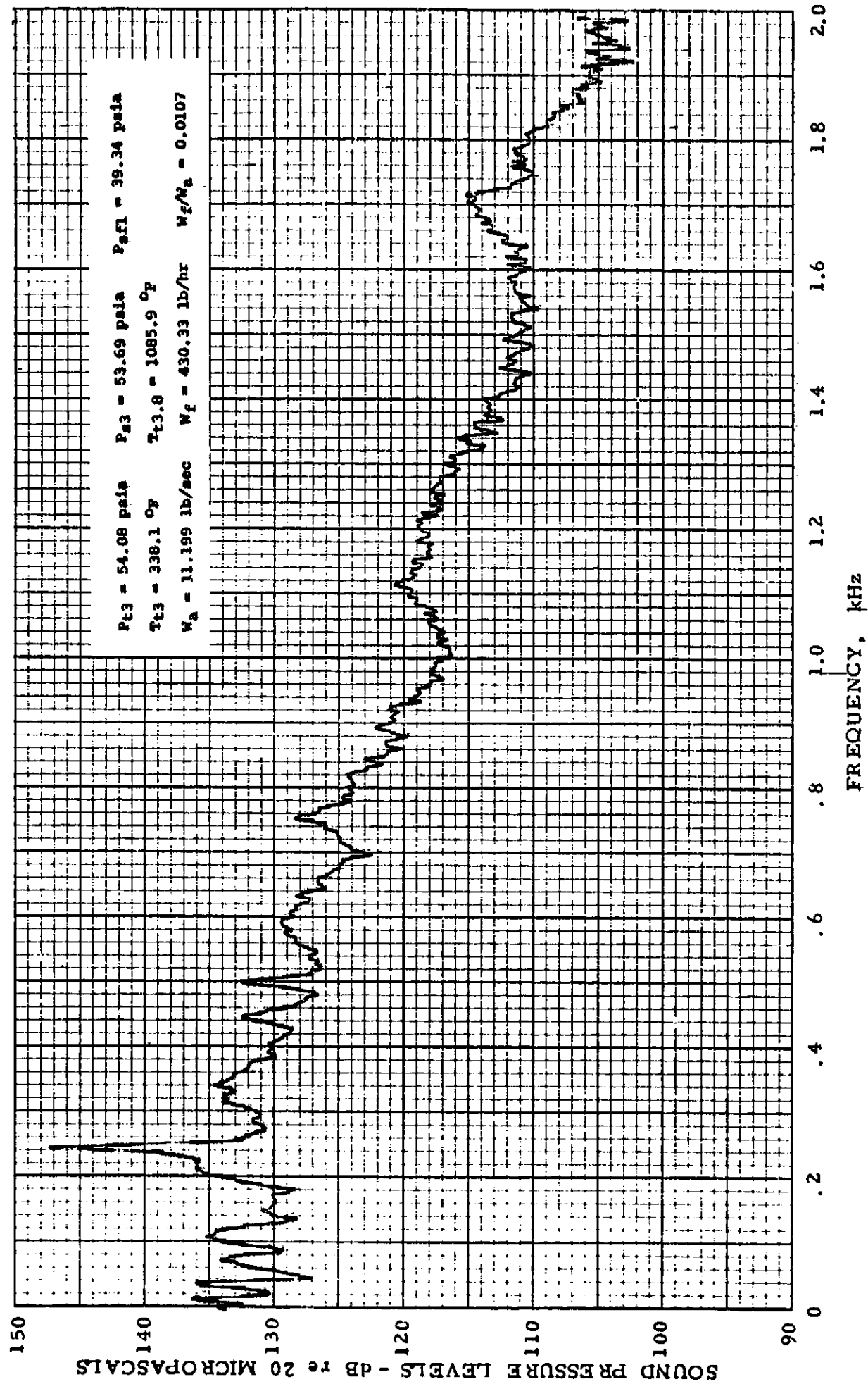
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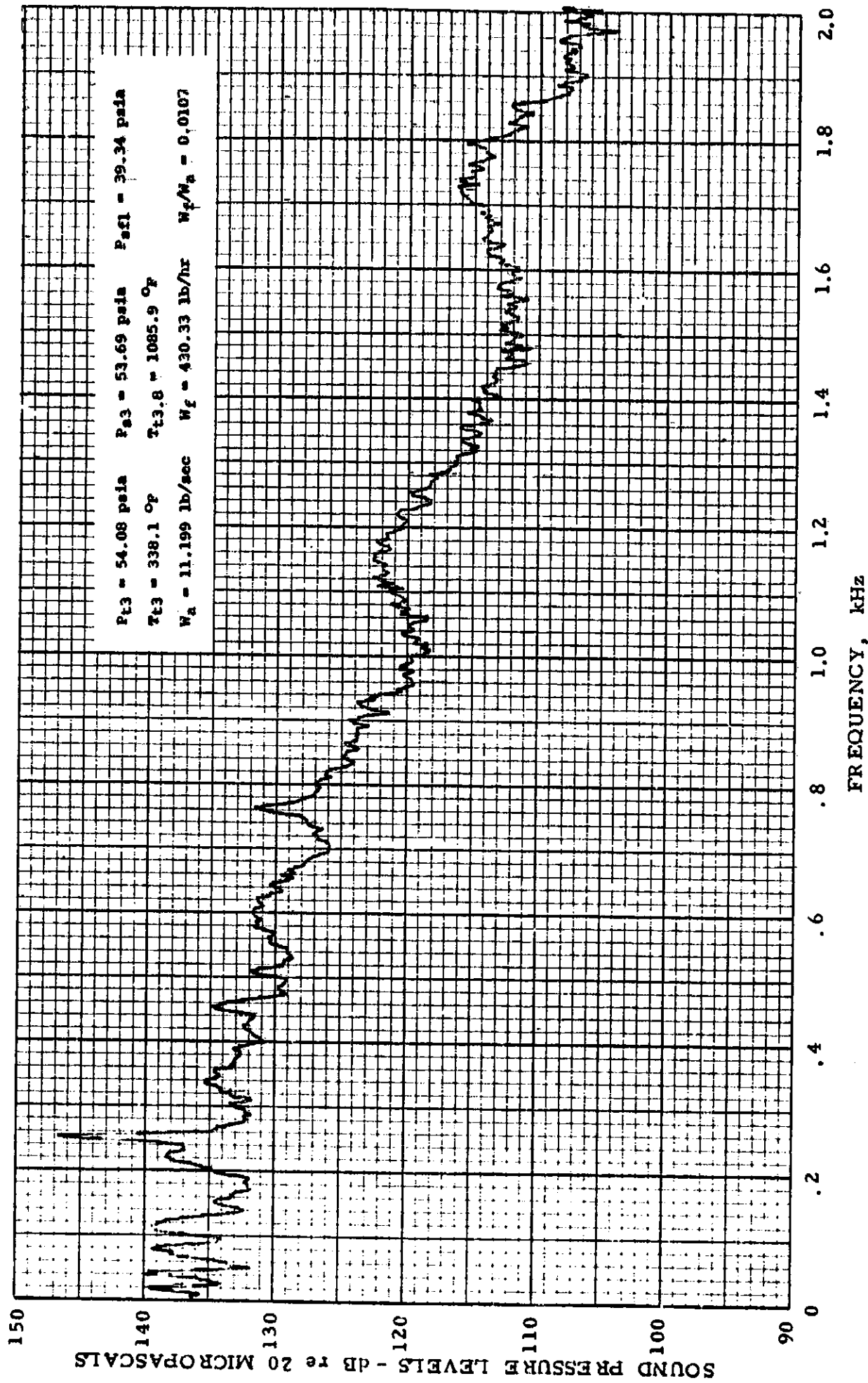
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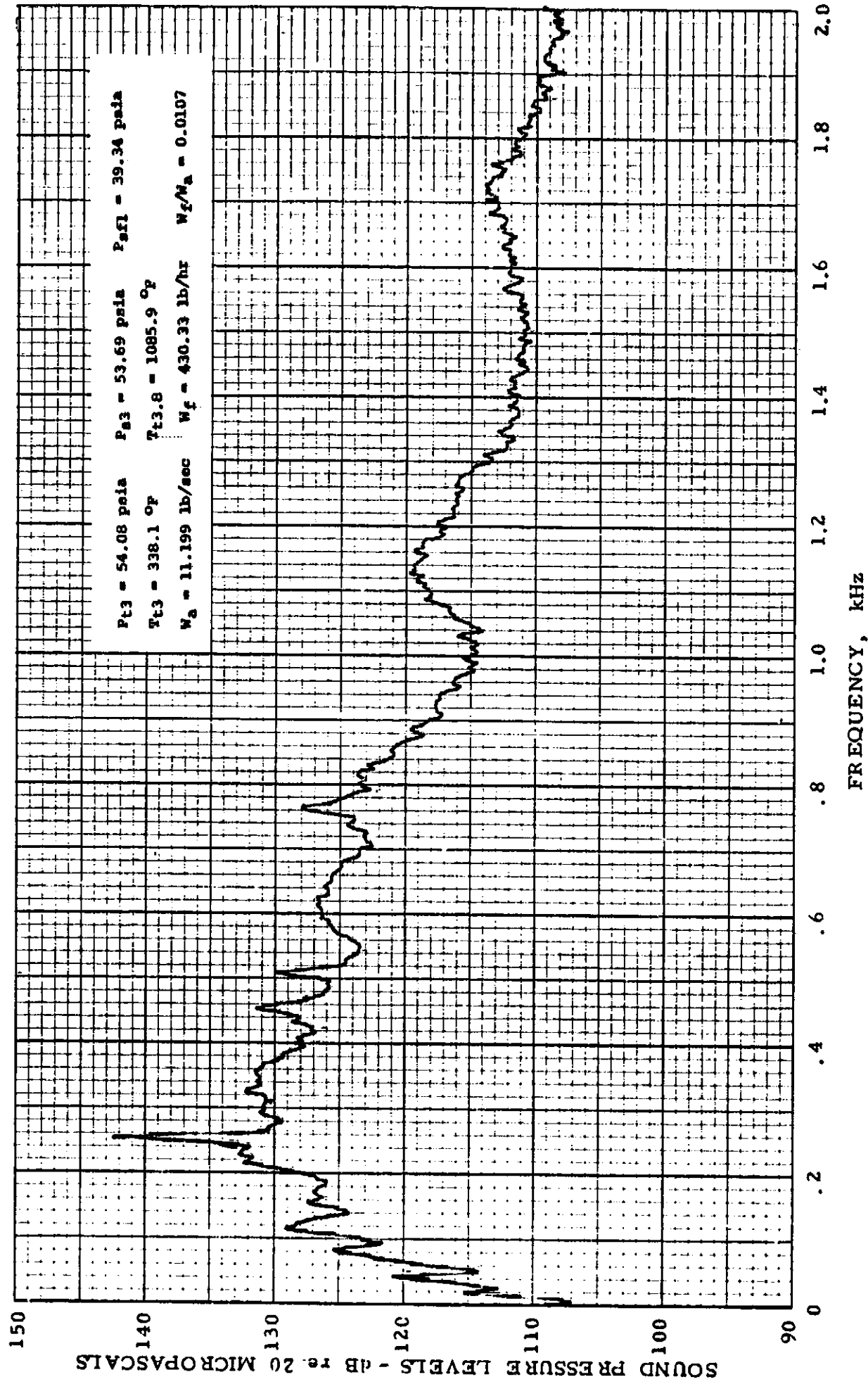
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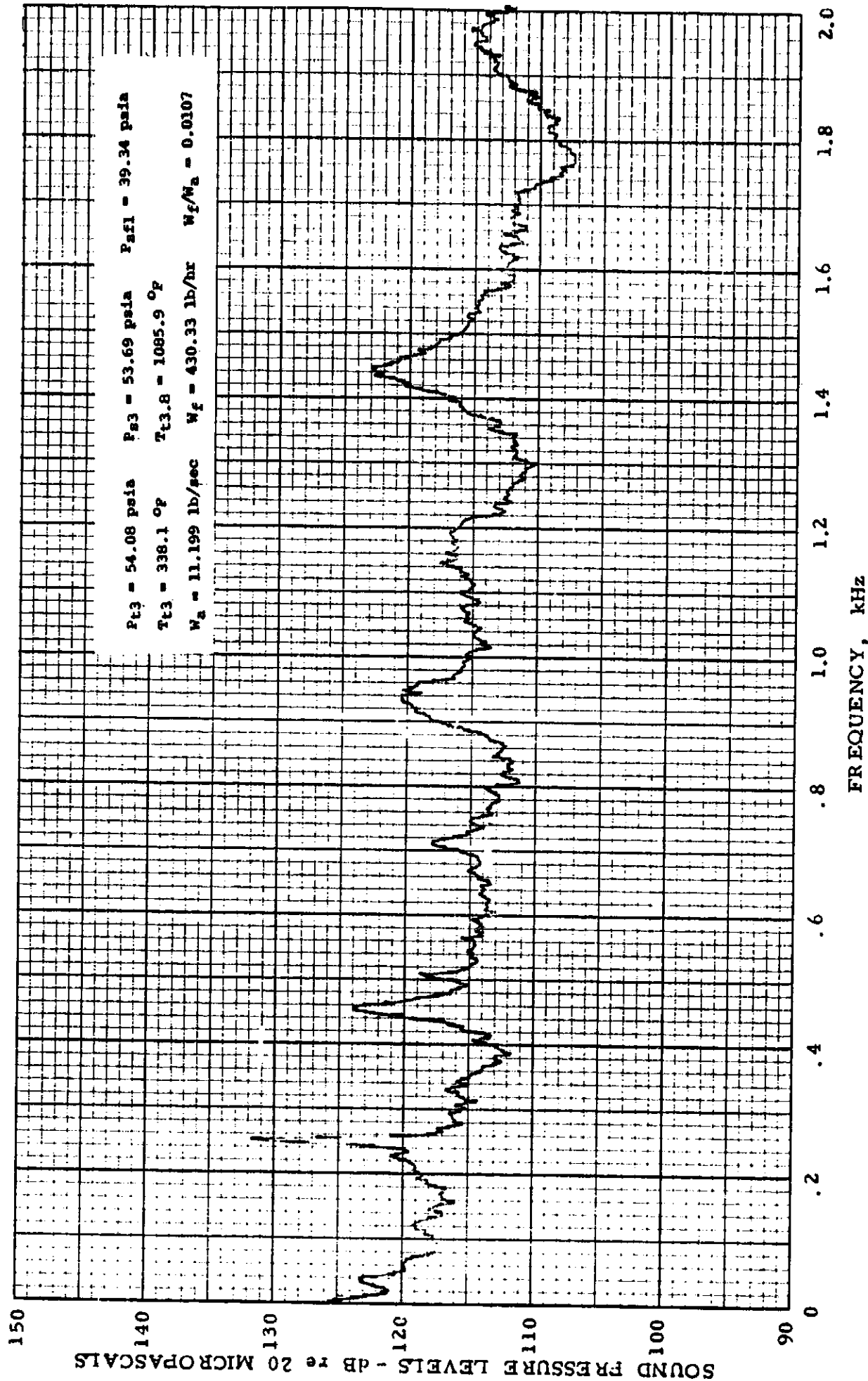
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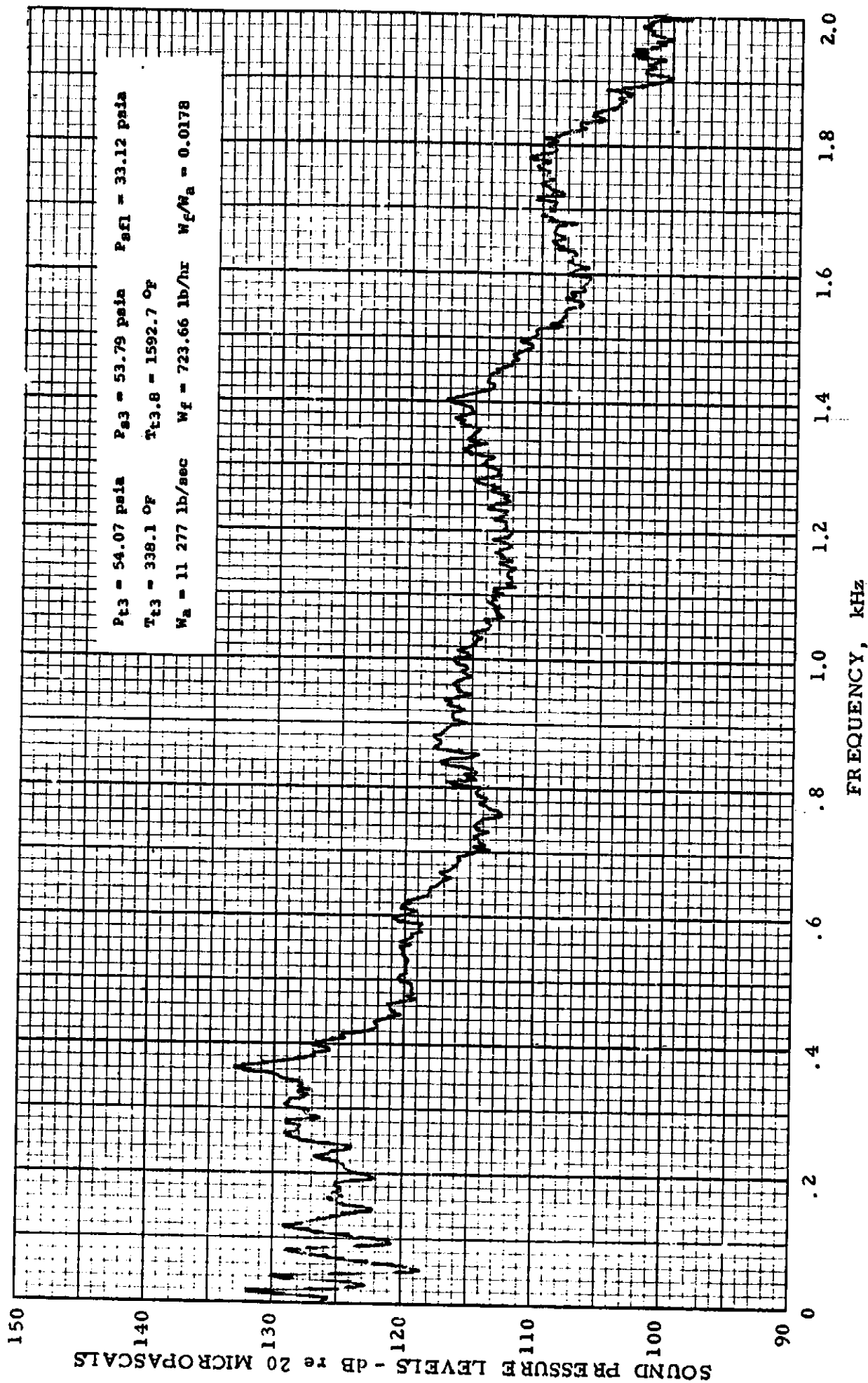
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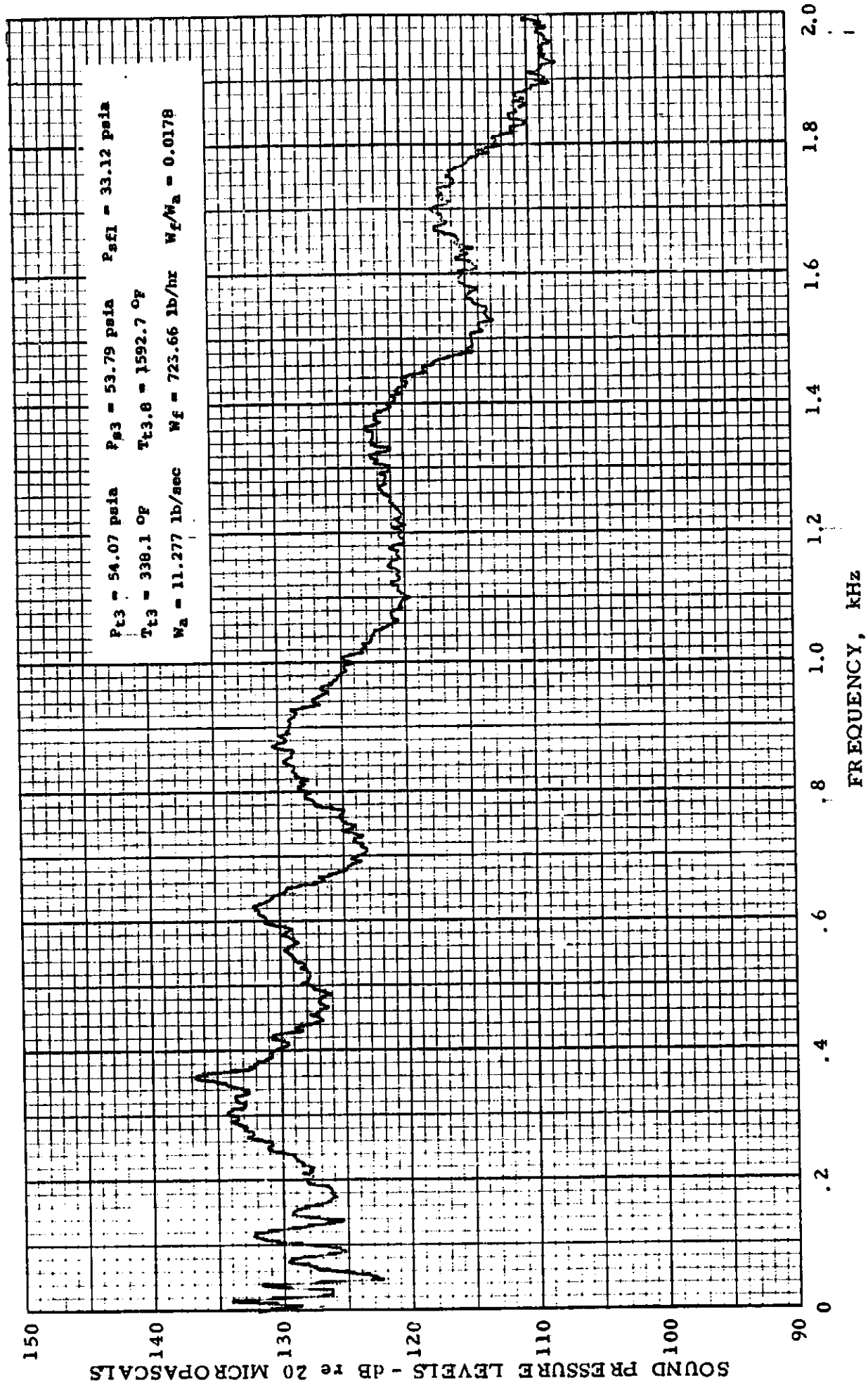
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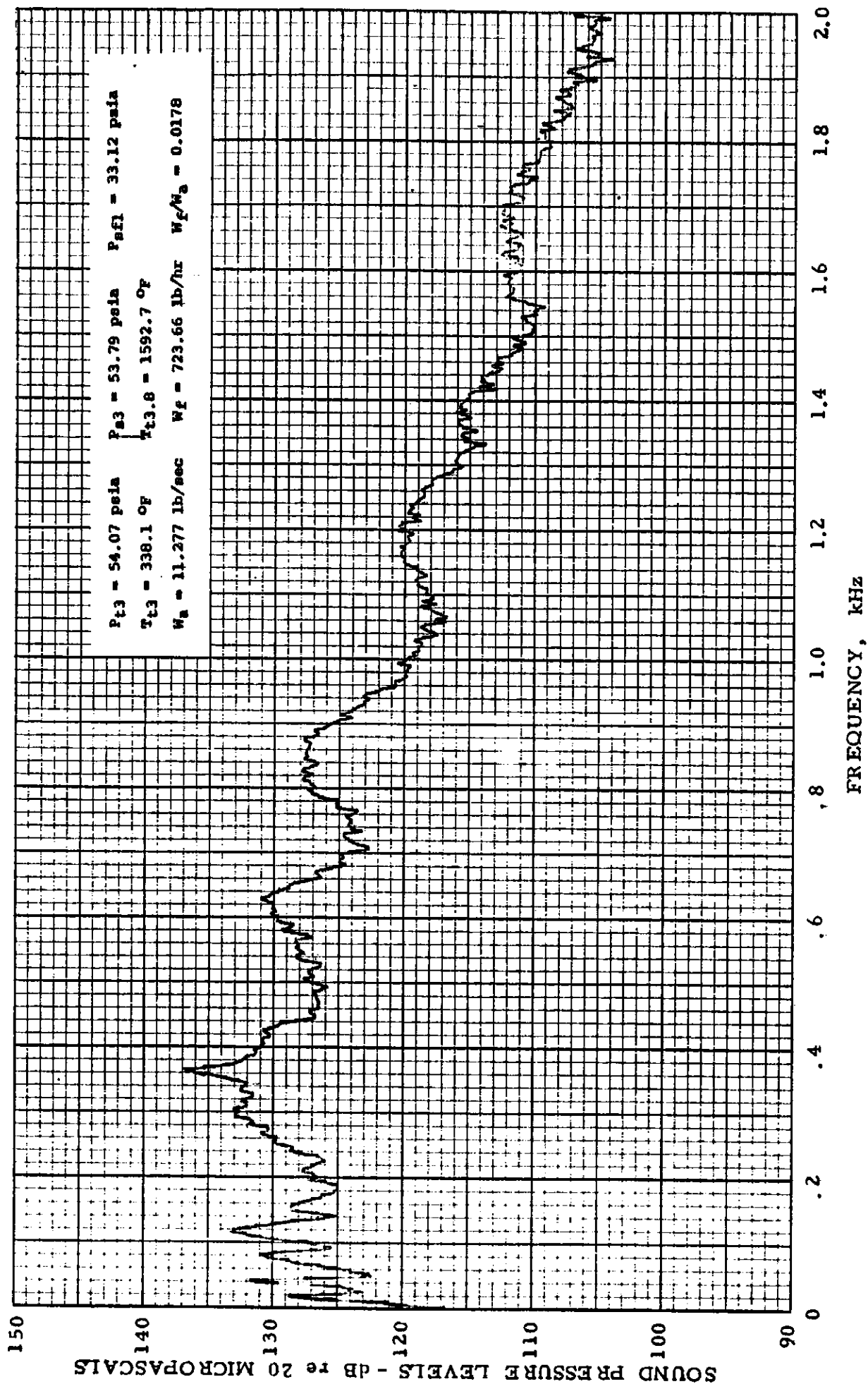
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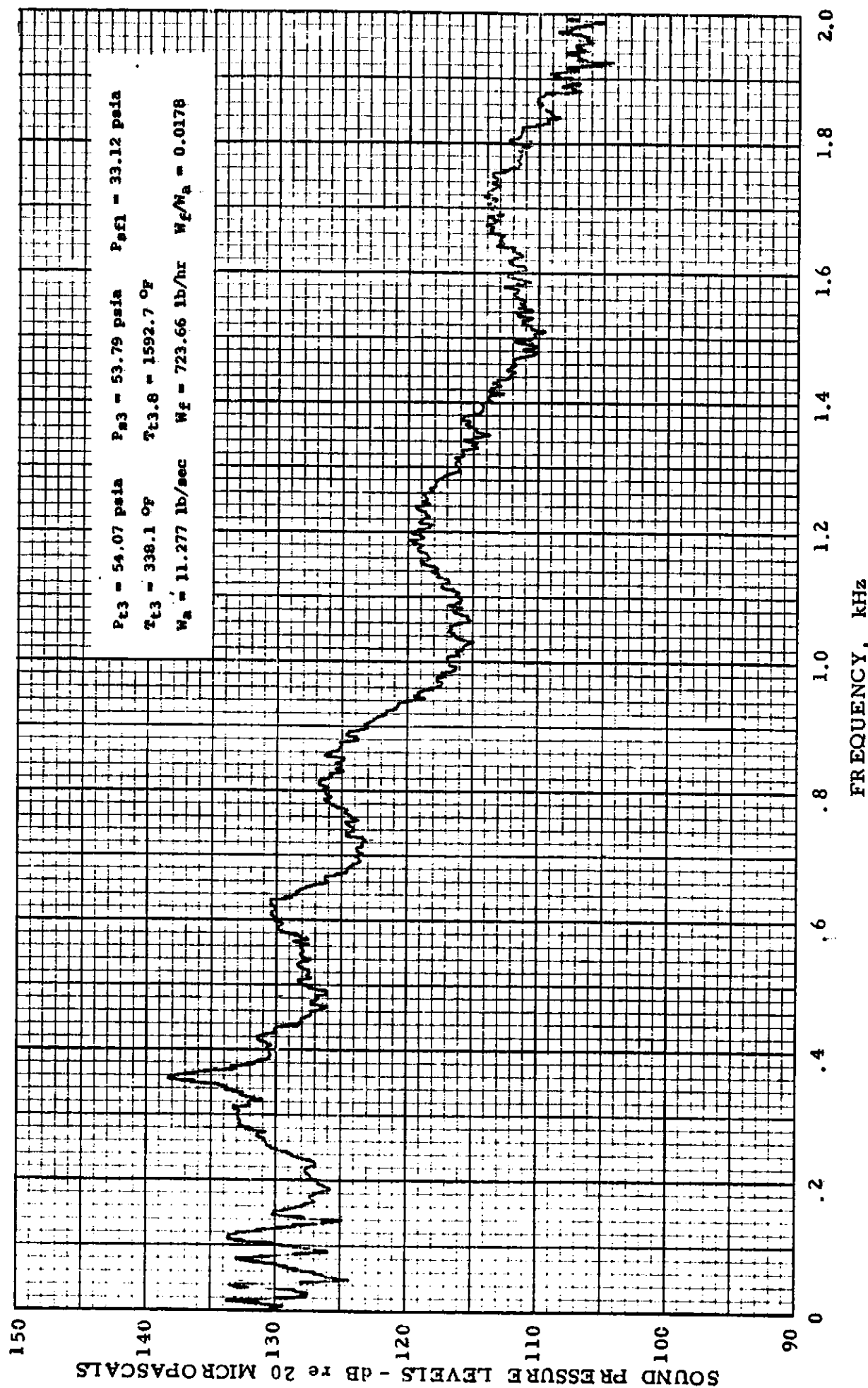
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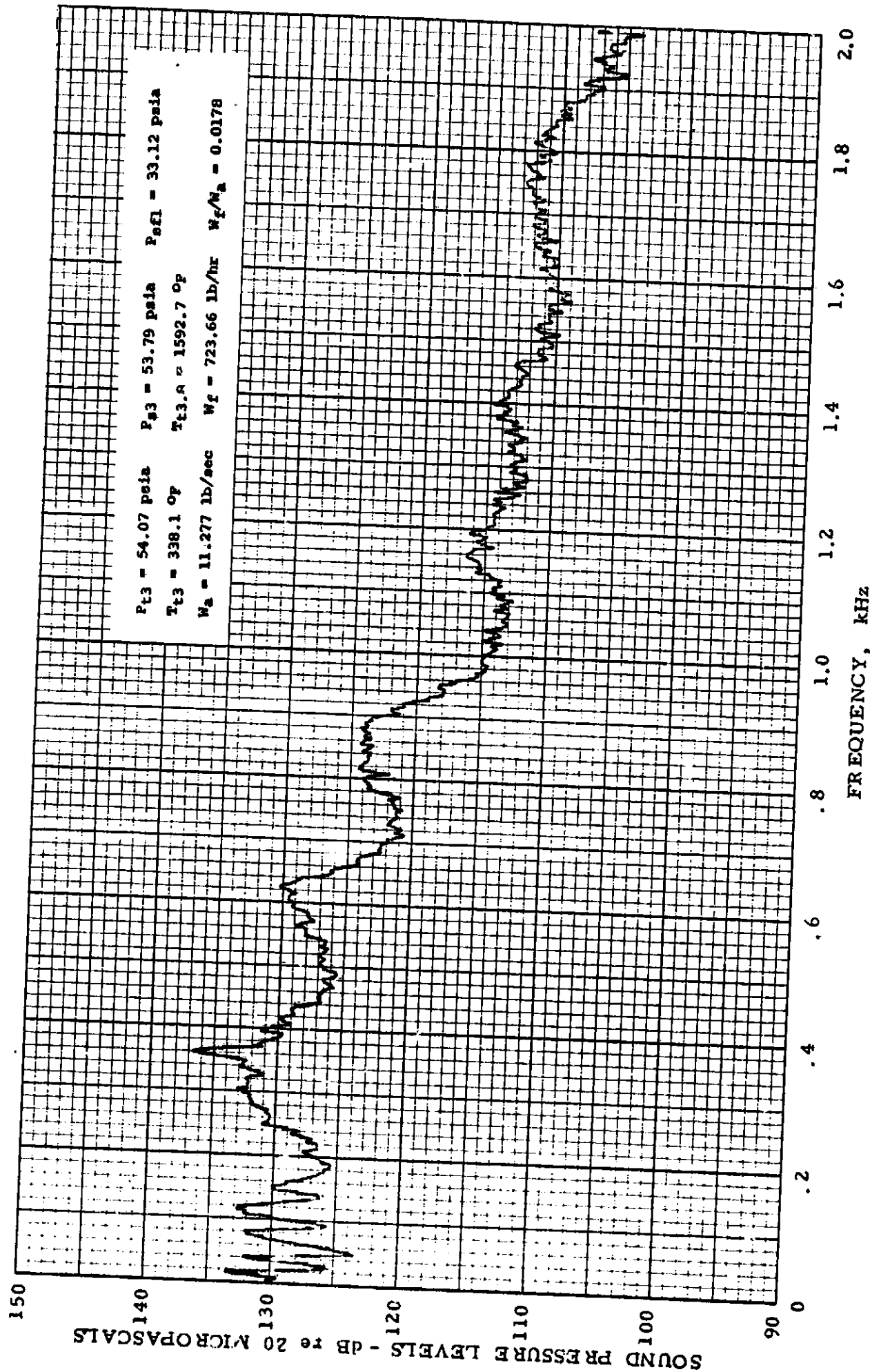
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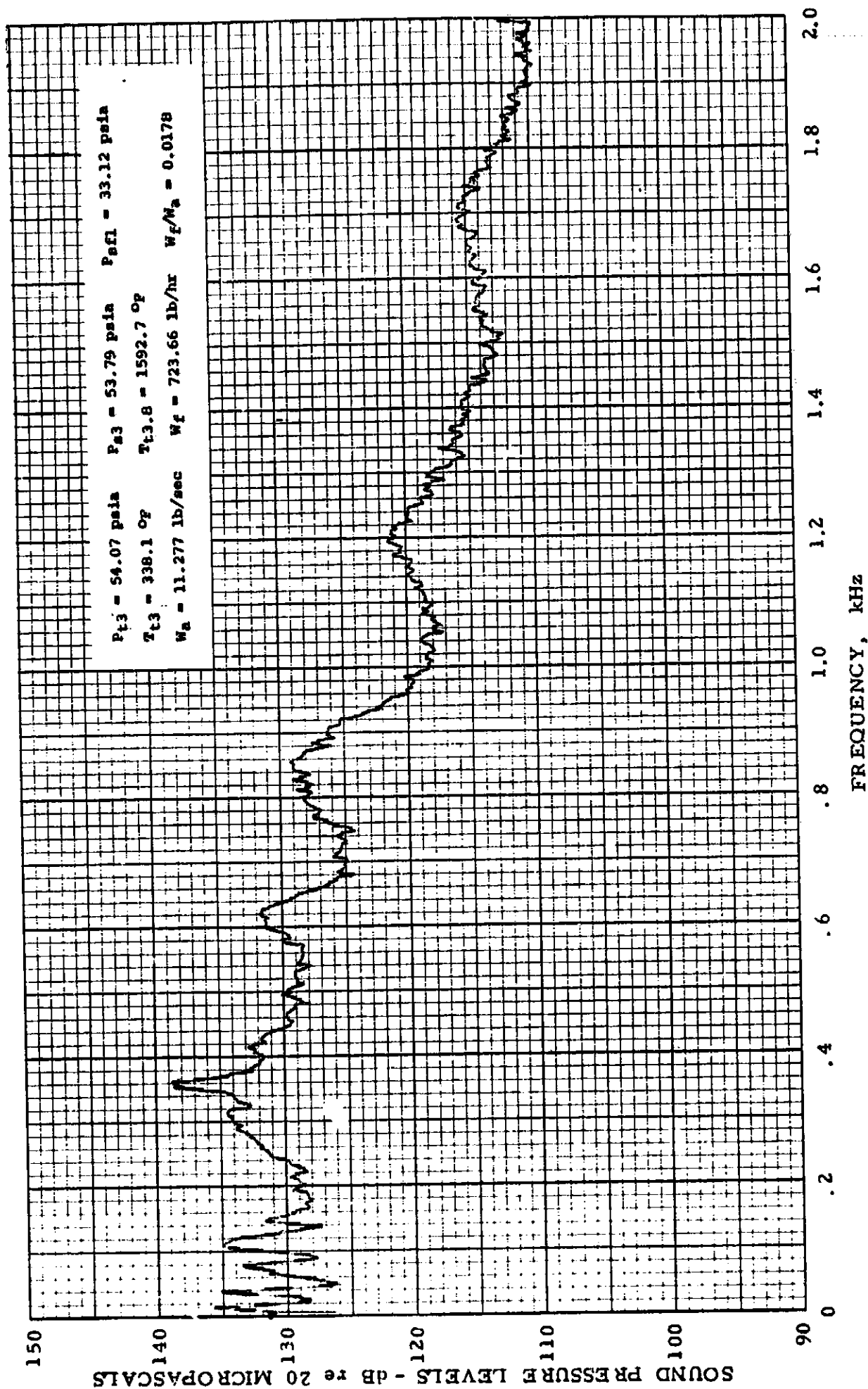
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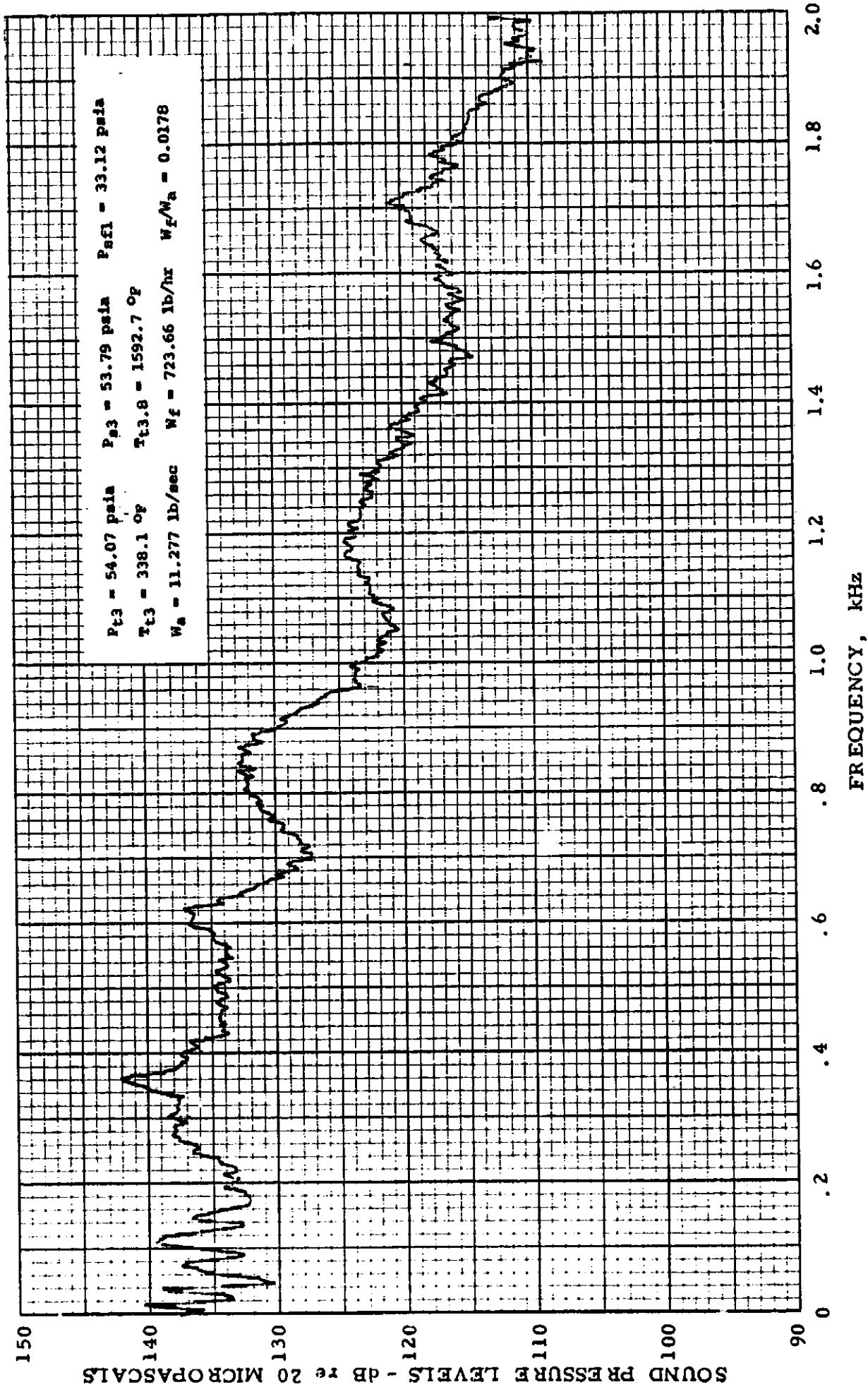
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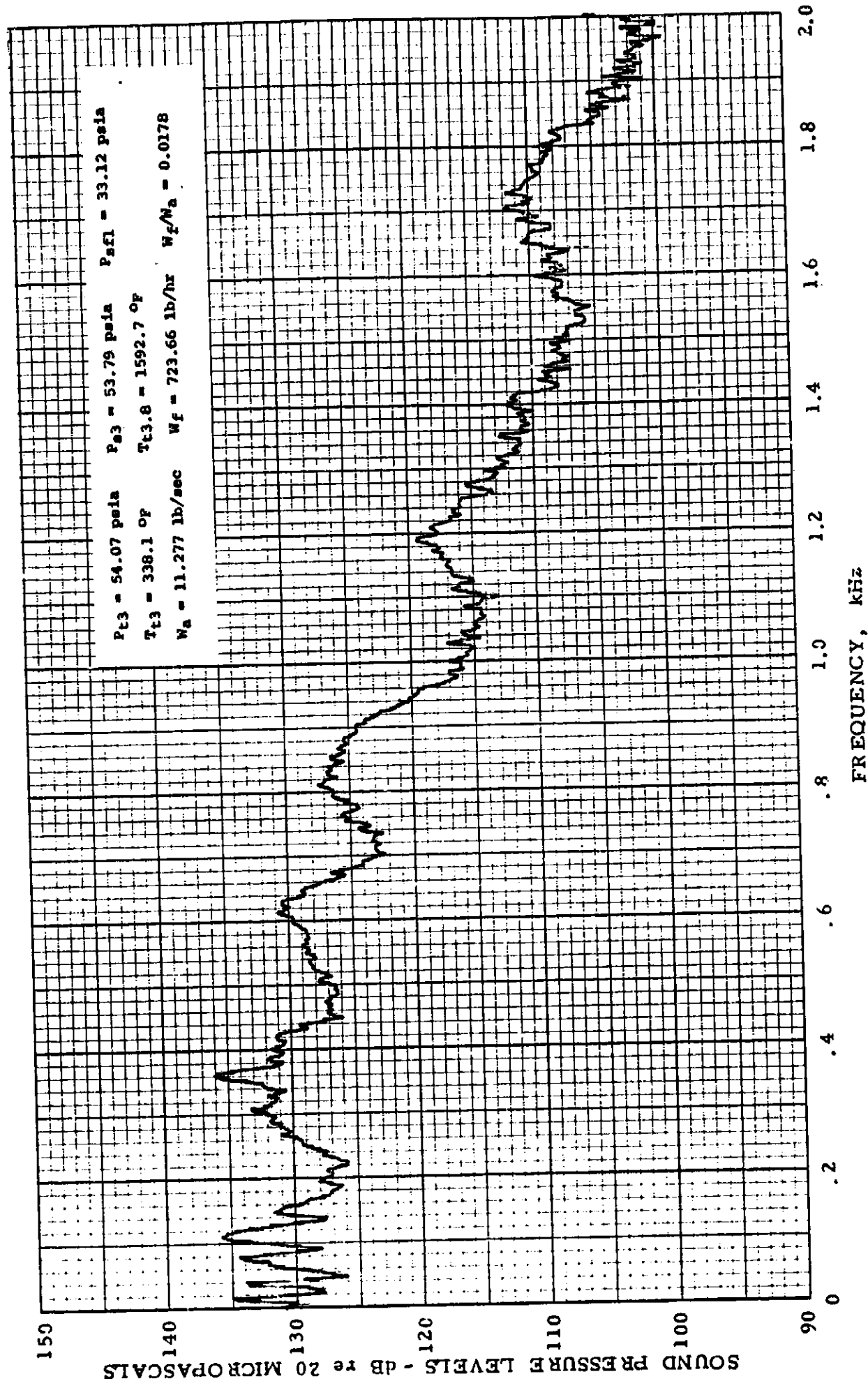
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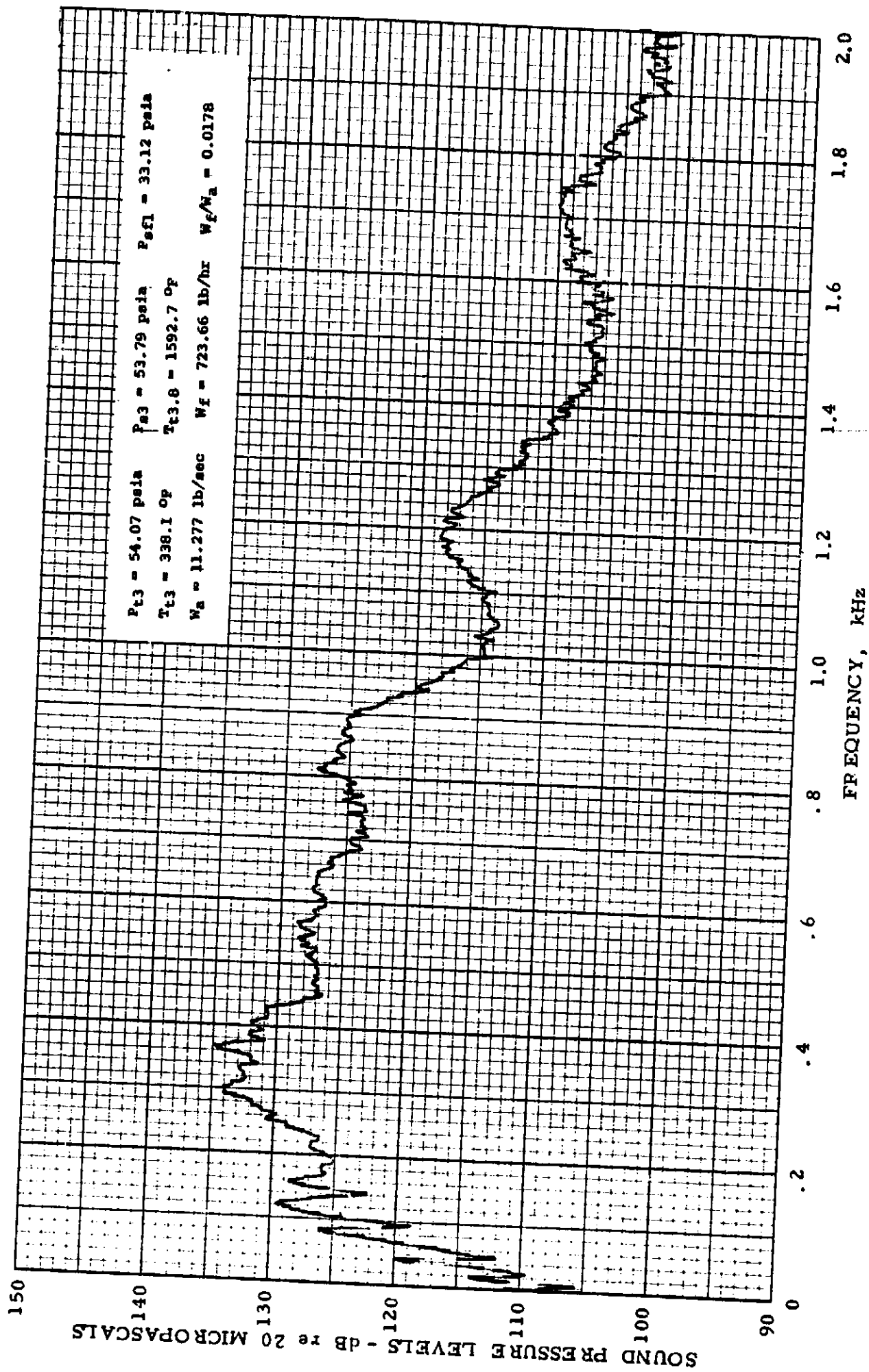
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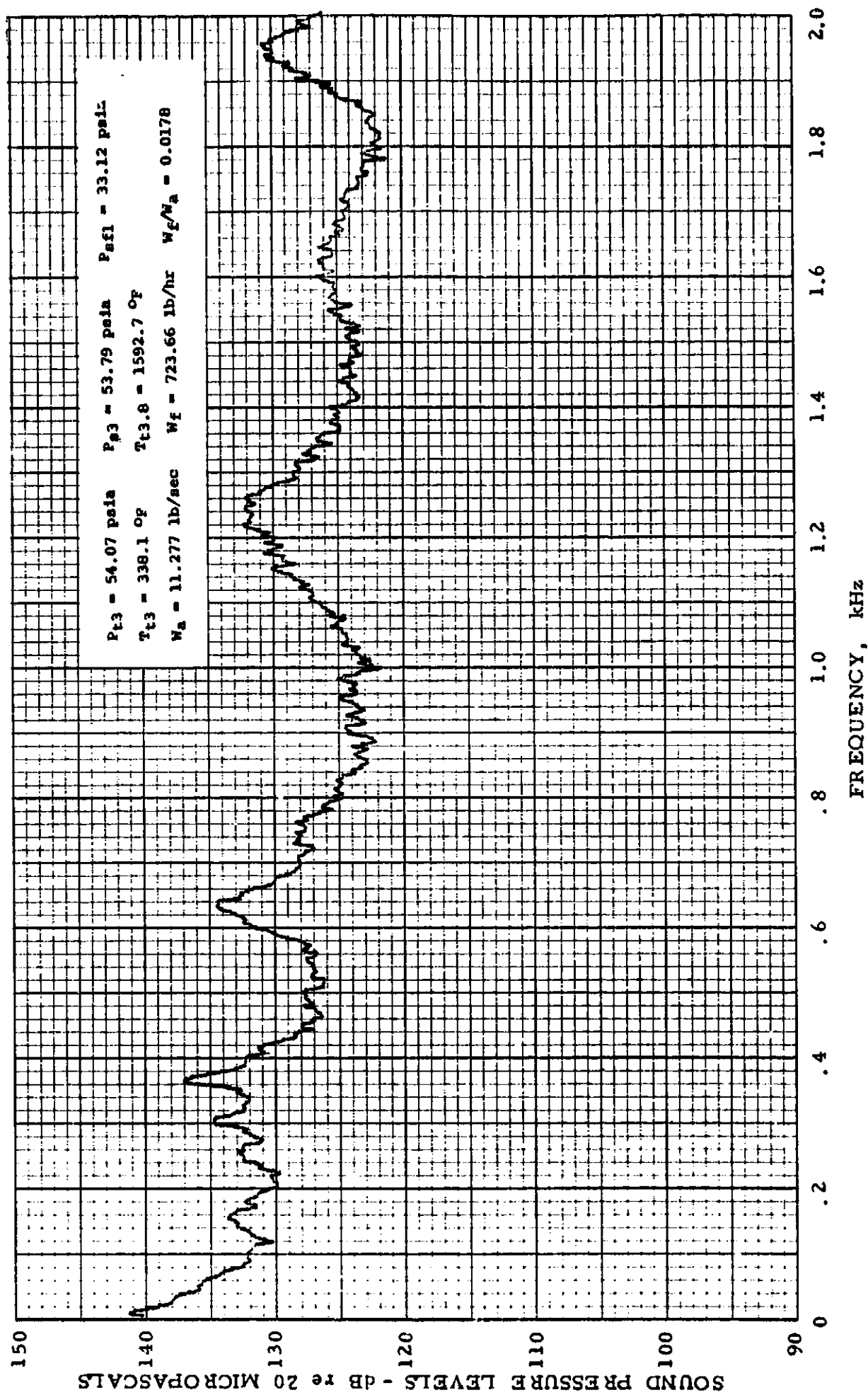
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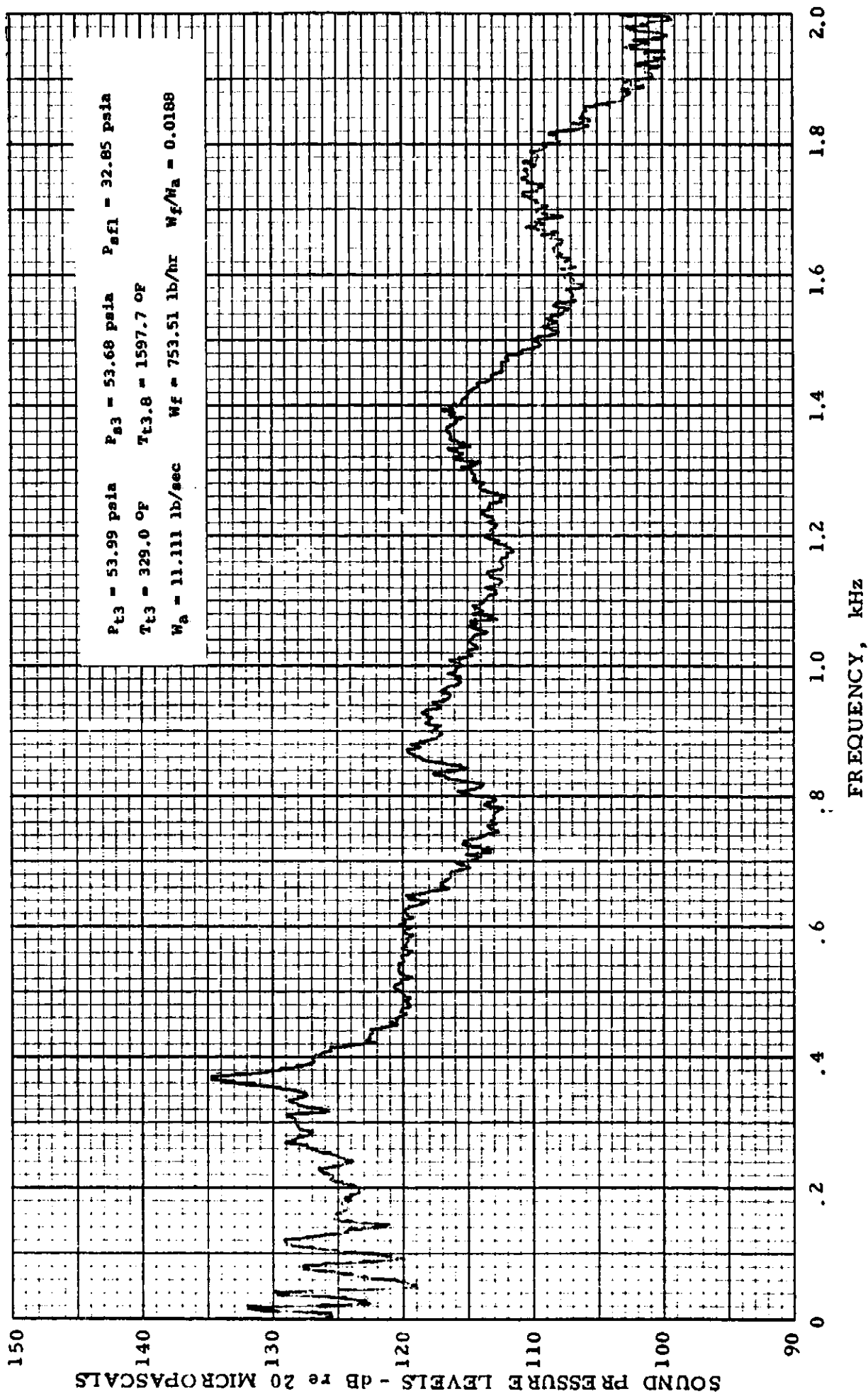
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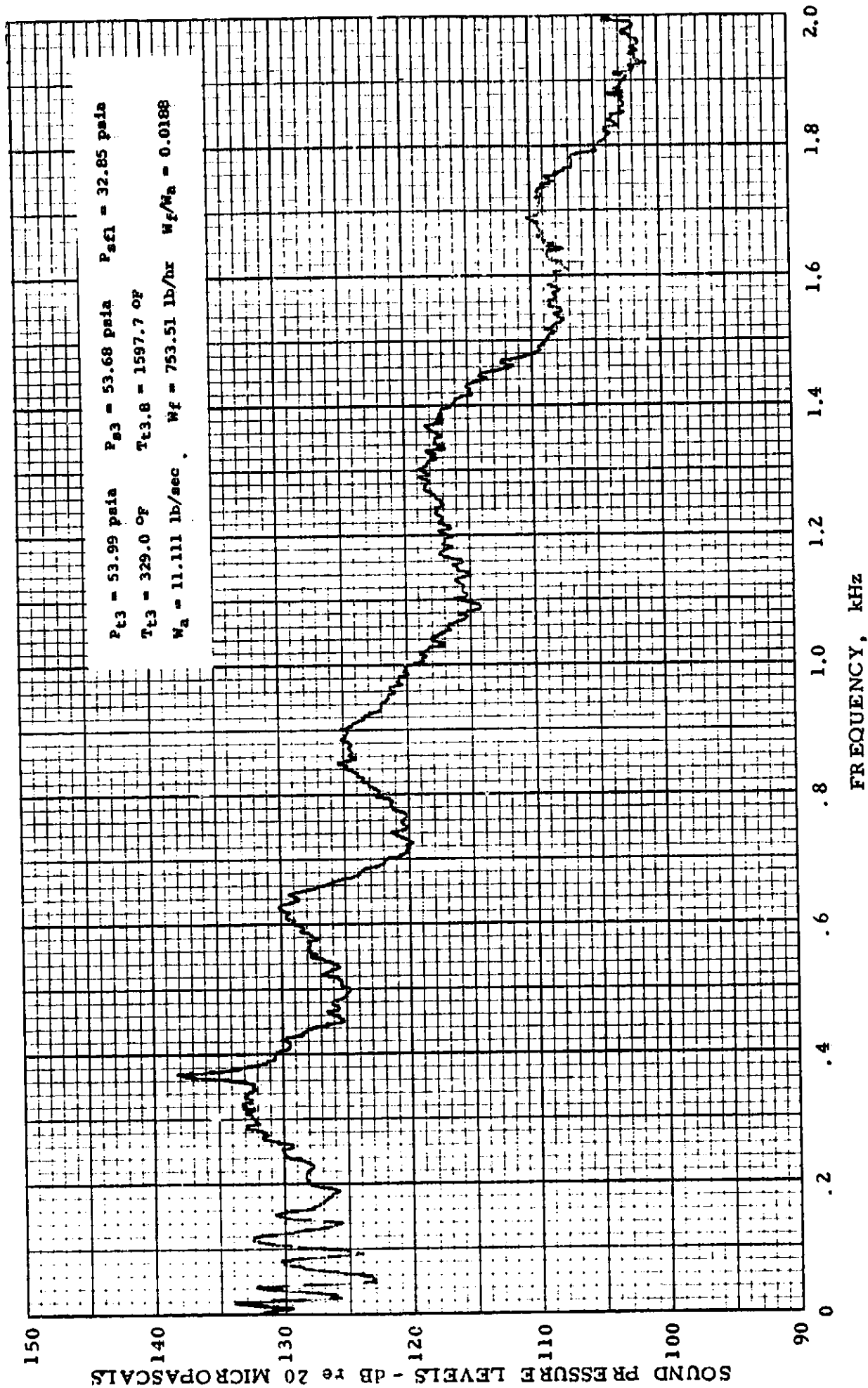
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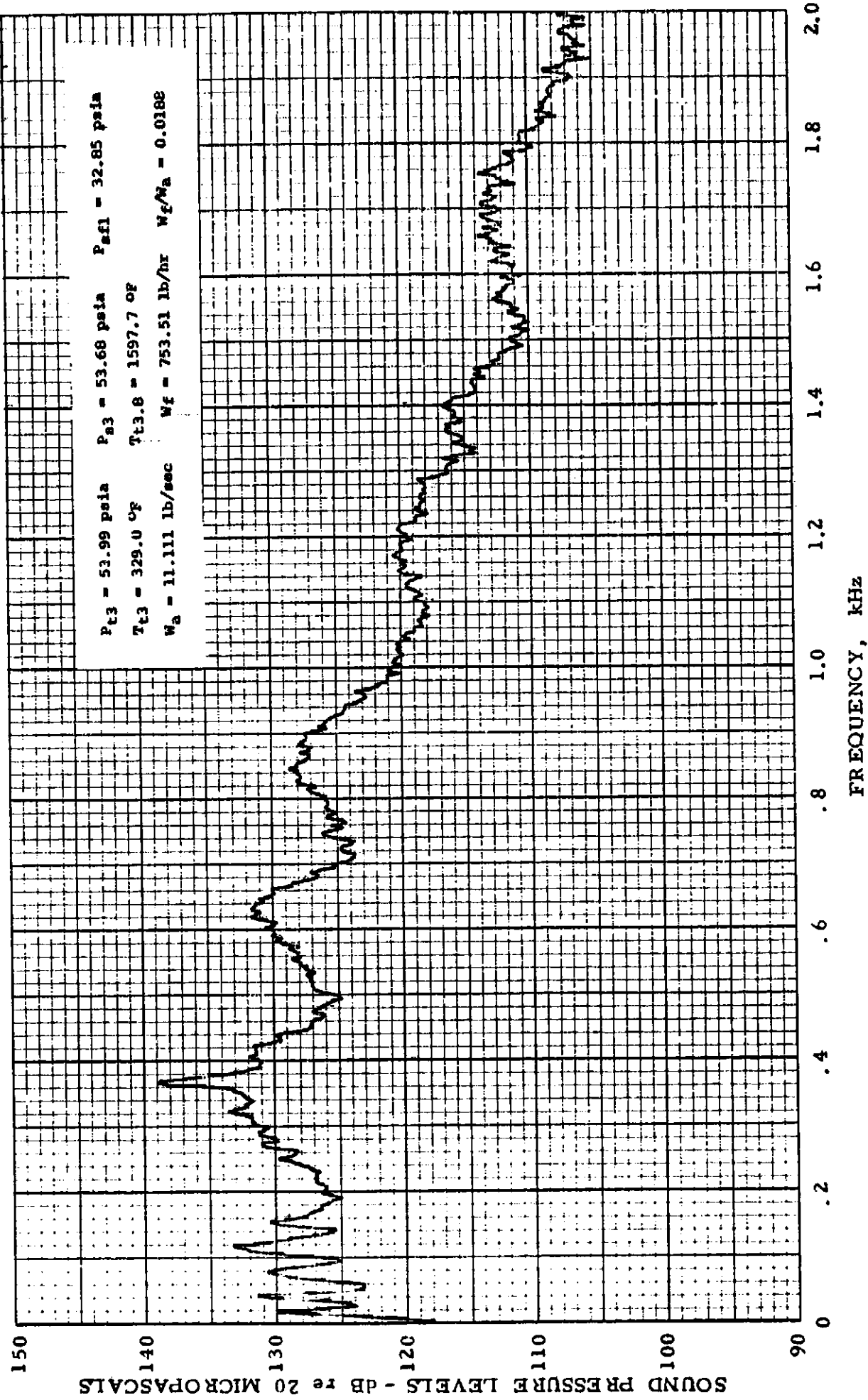
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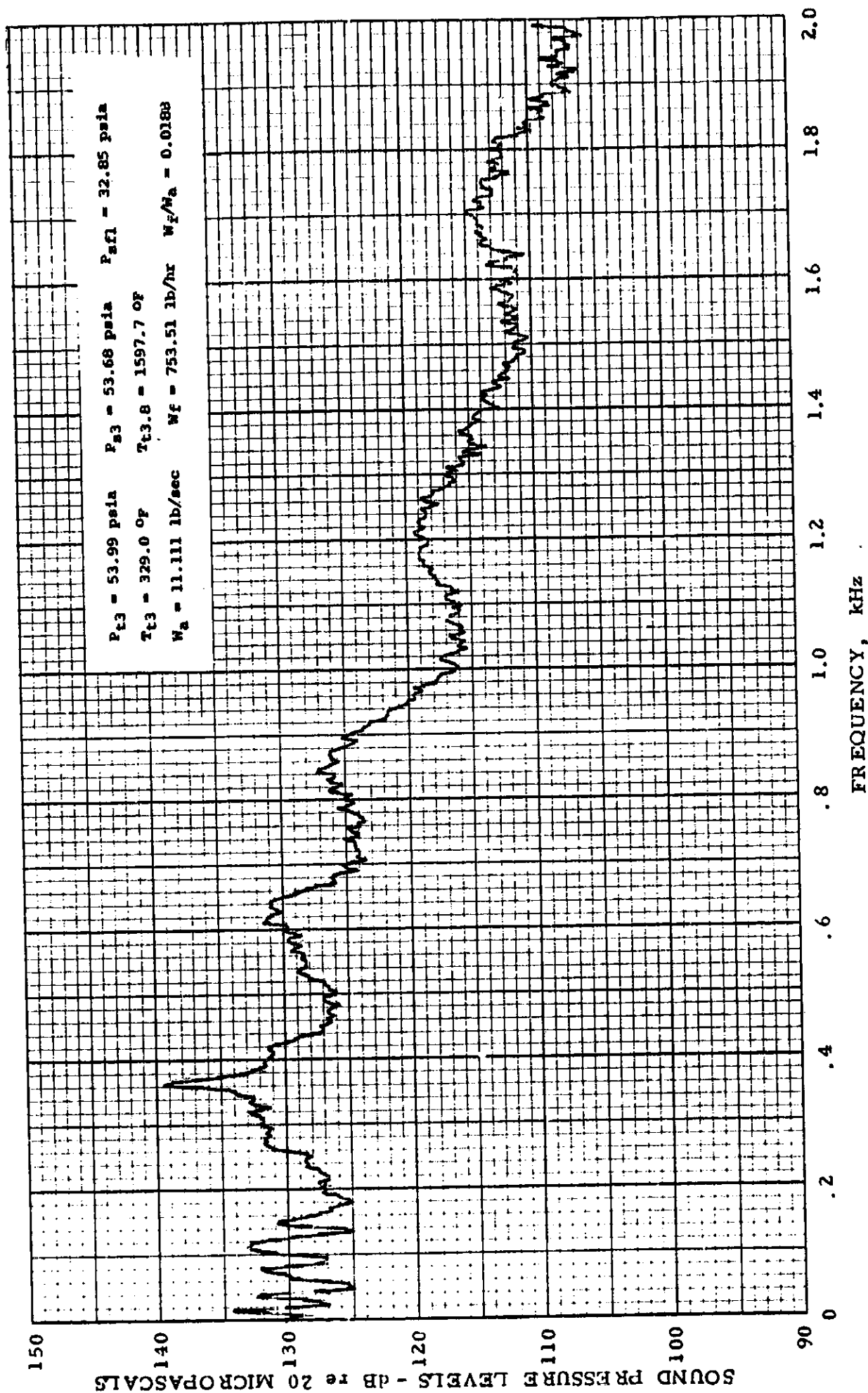
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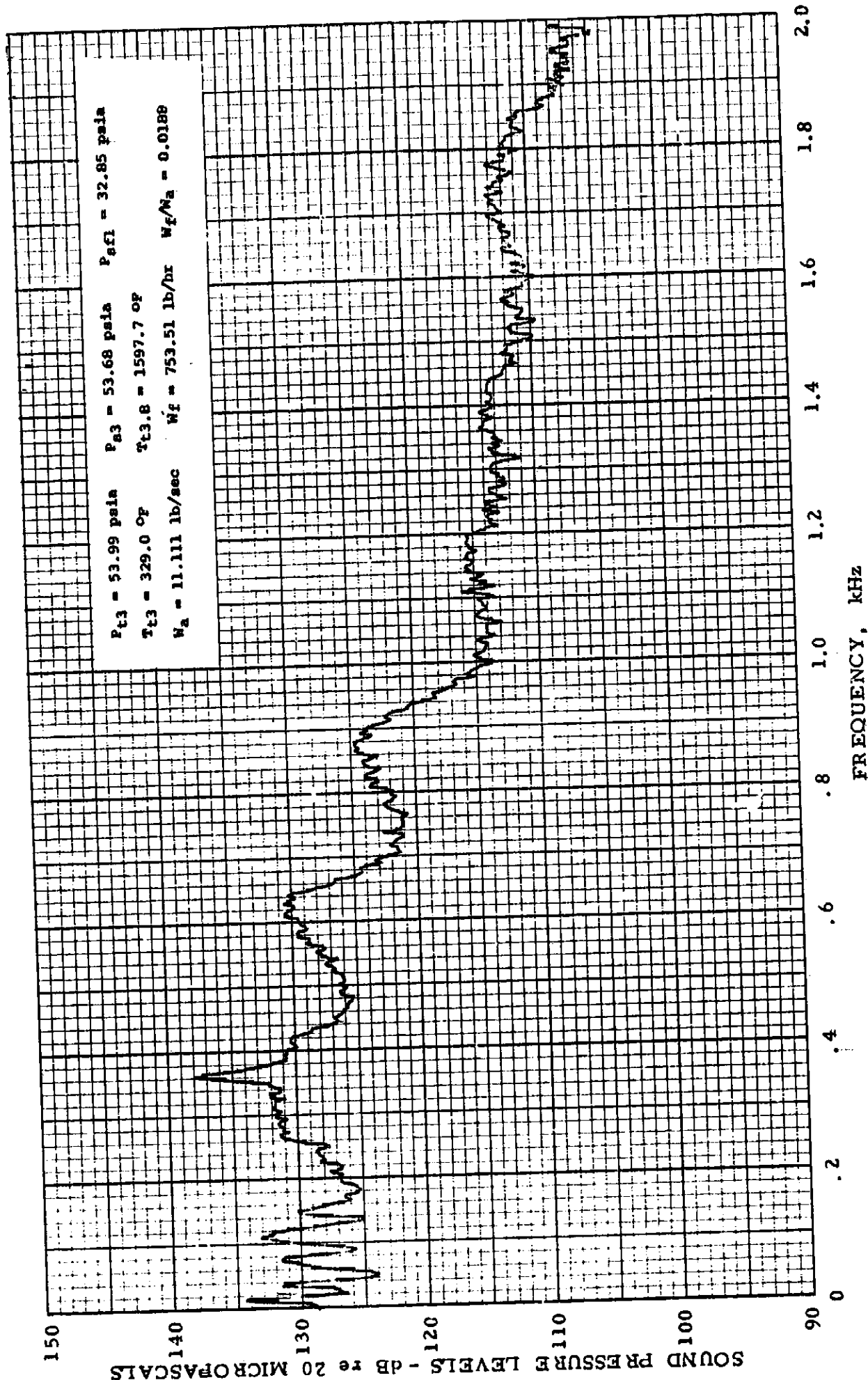
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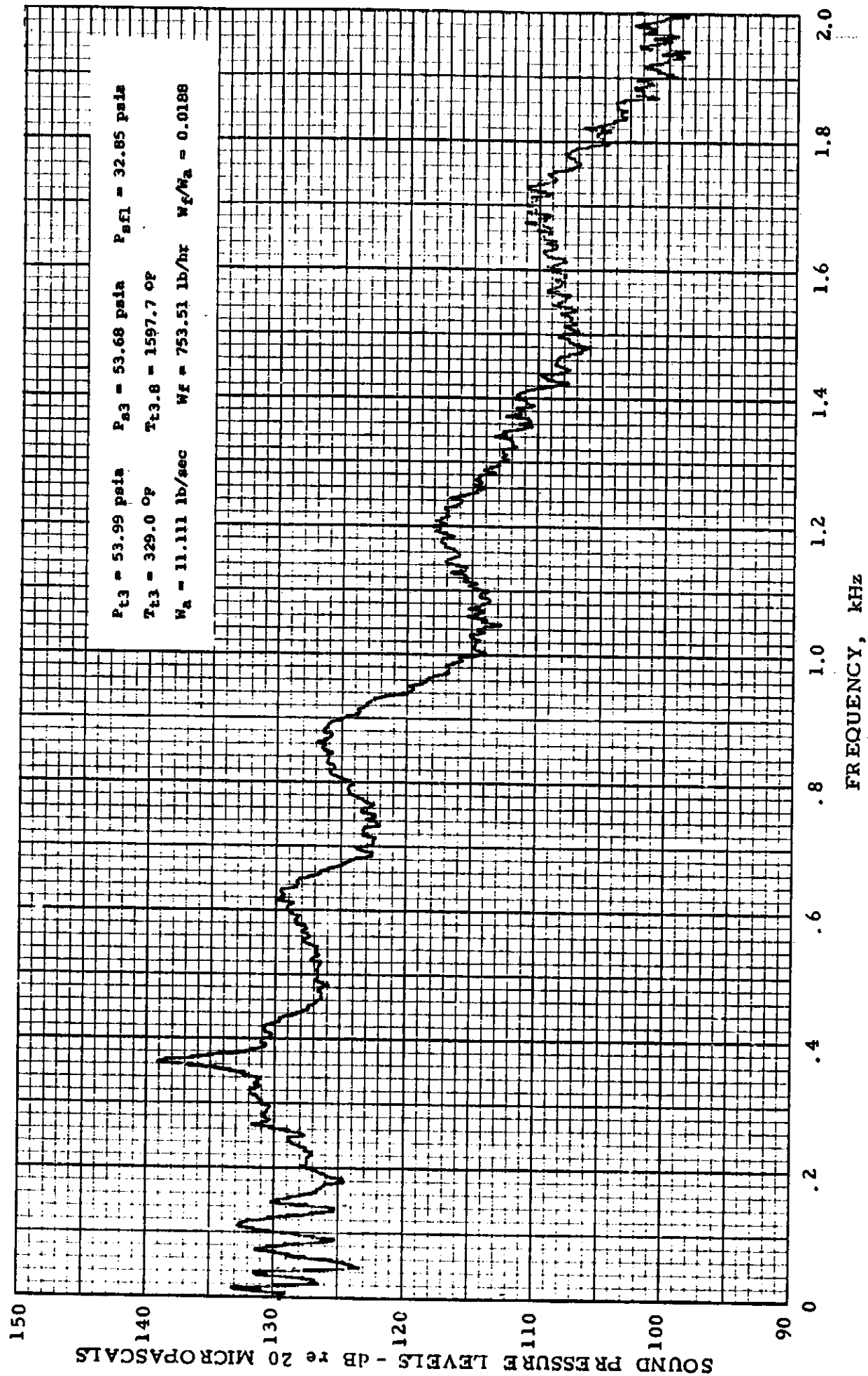
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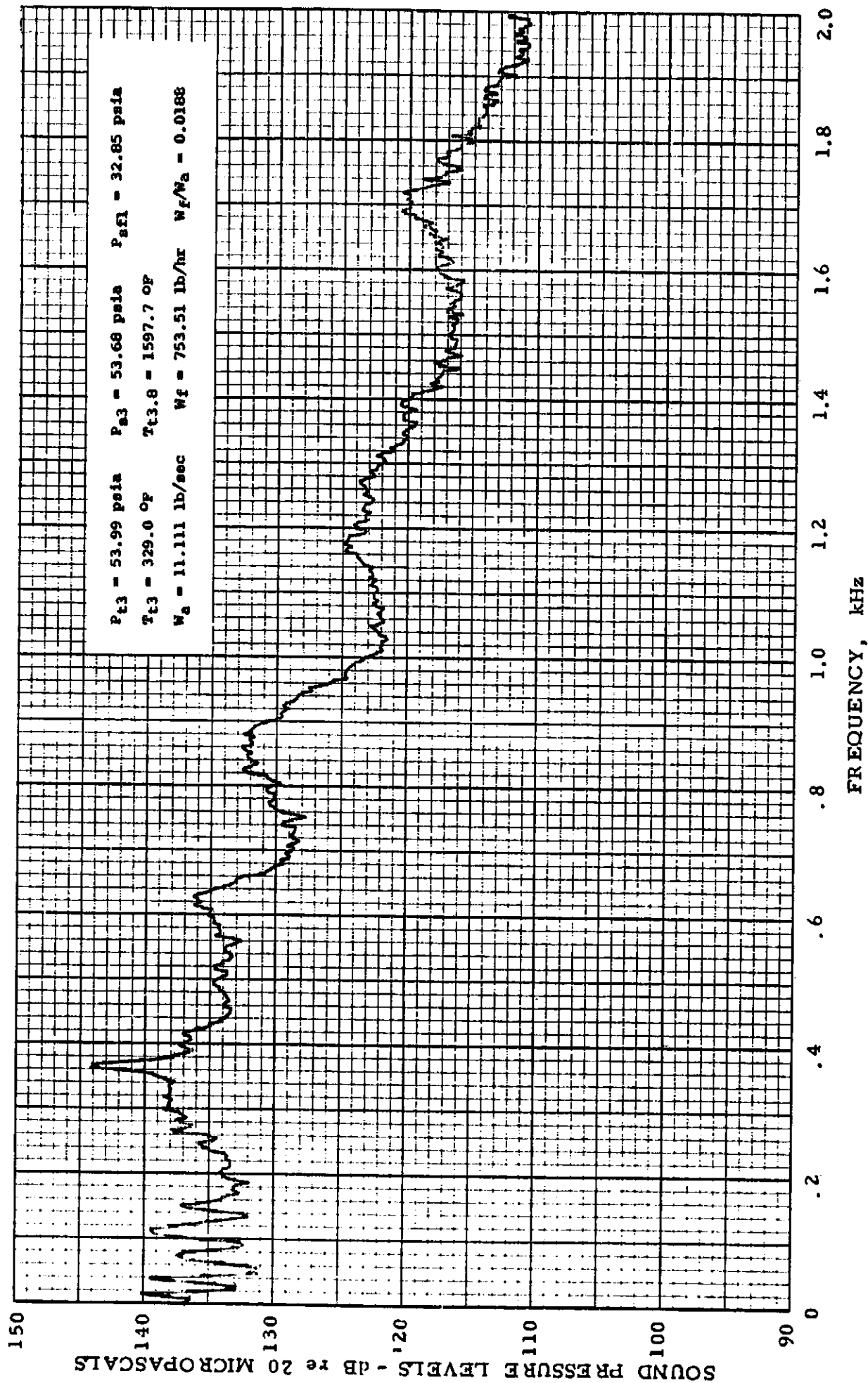
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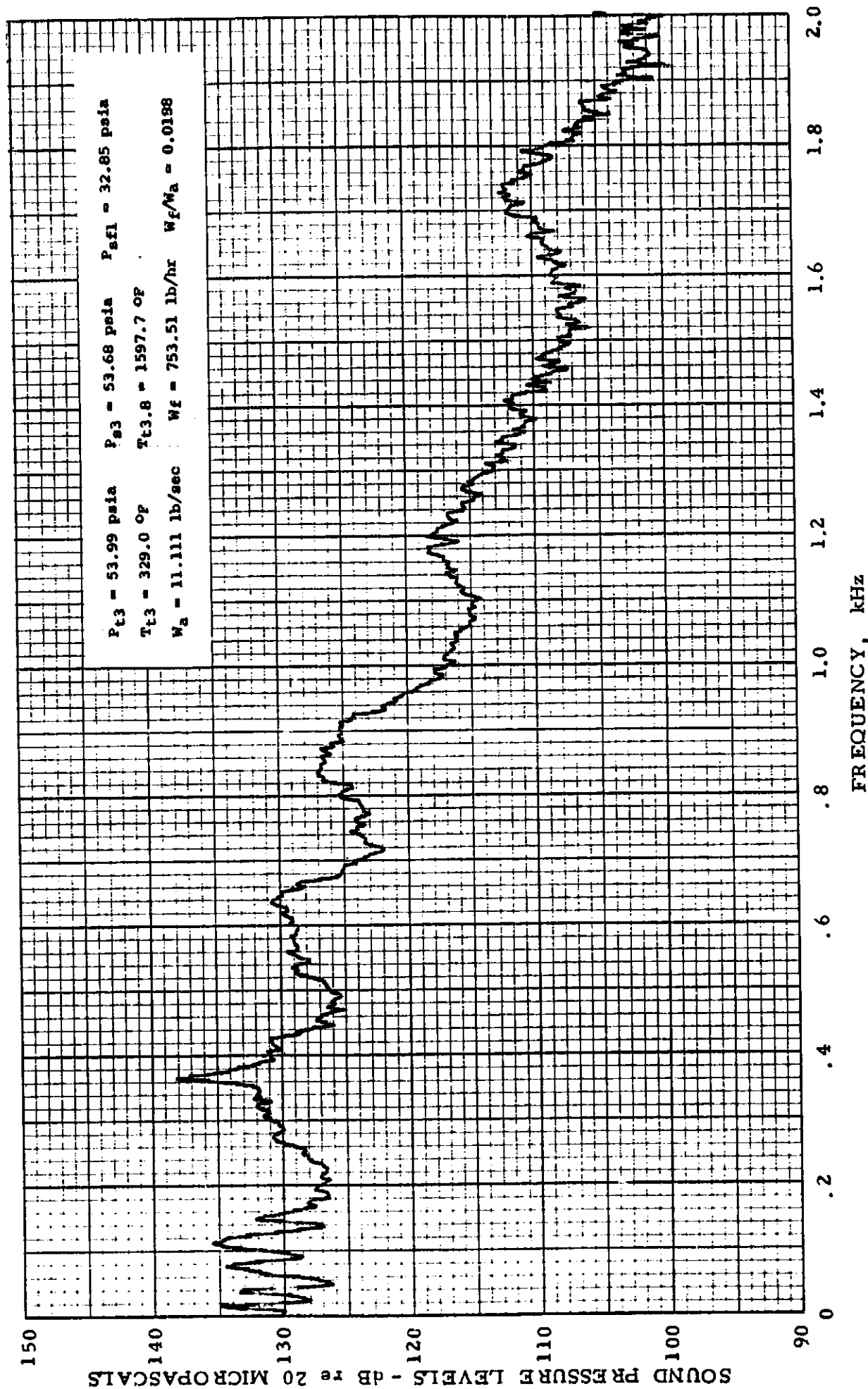
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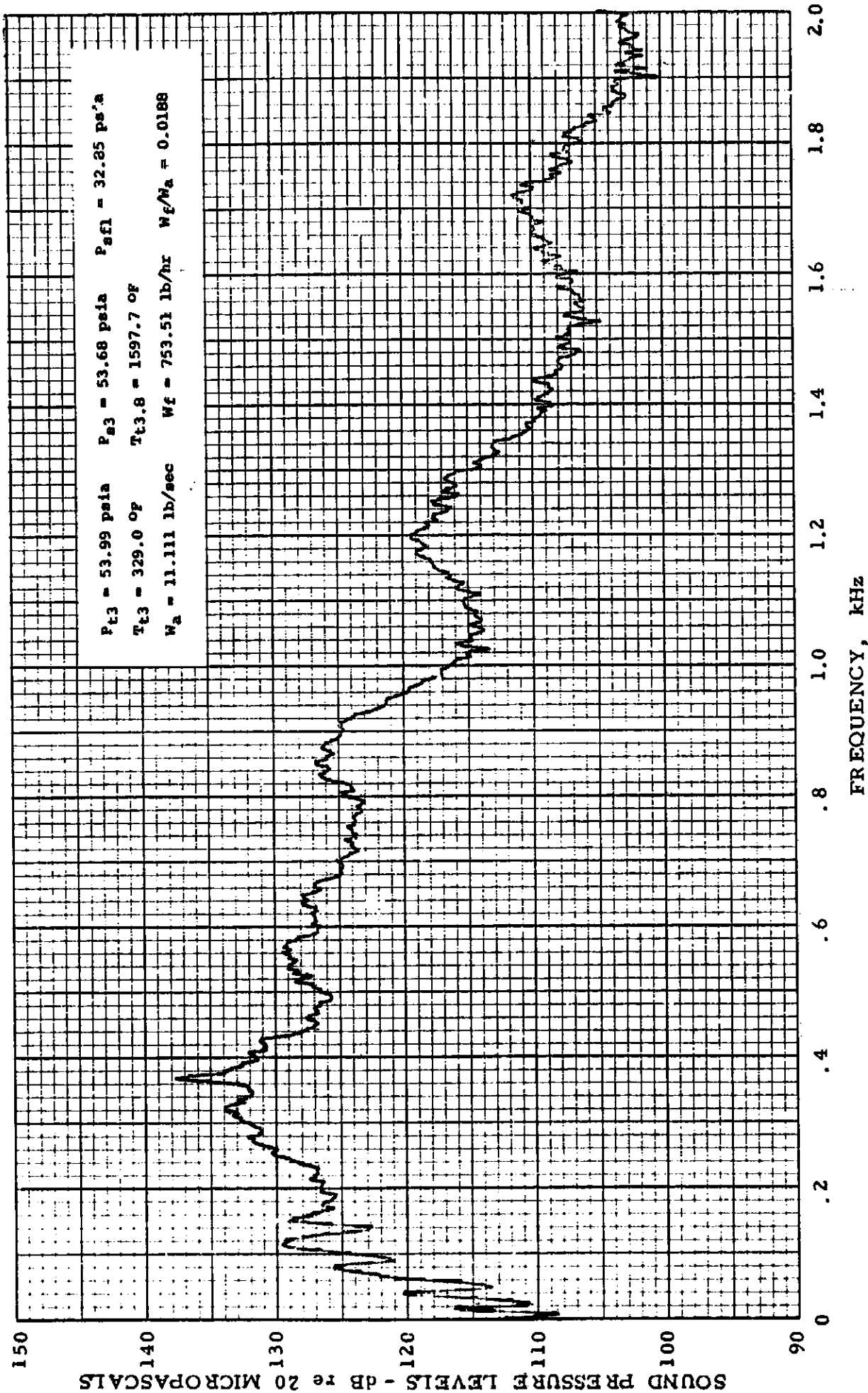
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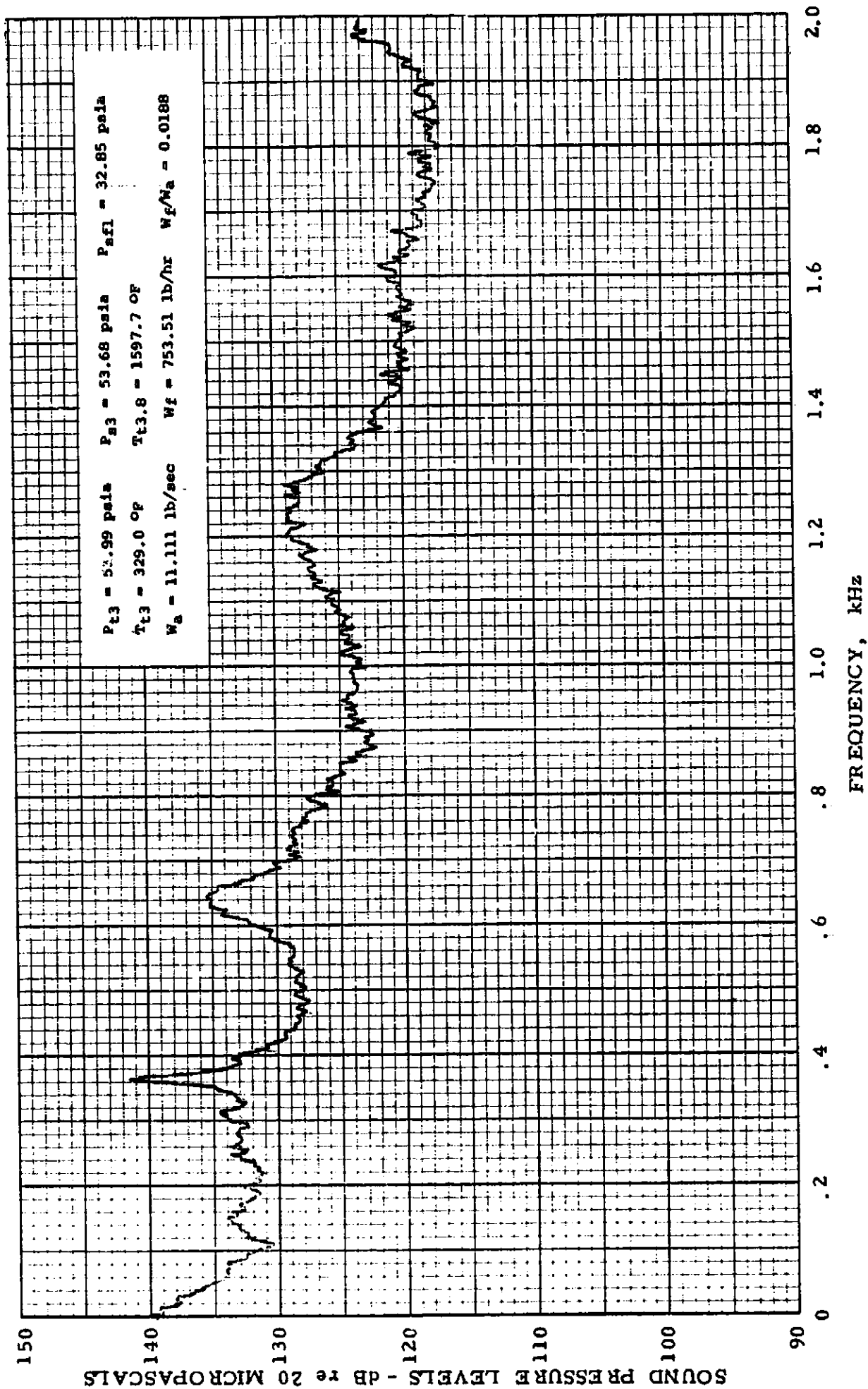
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NARROW BAND SPECTRUM AT PROBE NUMBER 8 DURING RUN POINT NUMBER 113



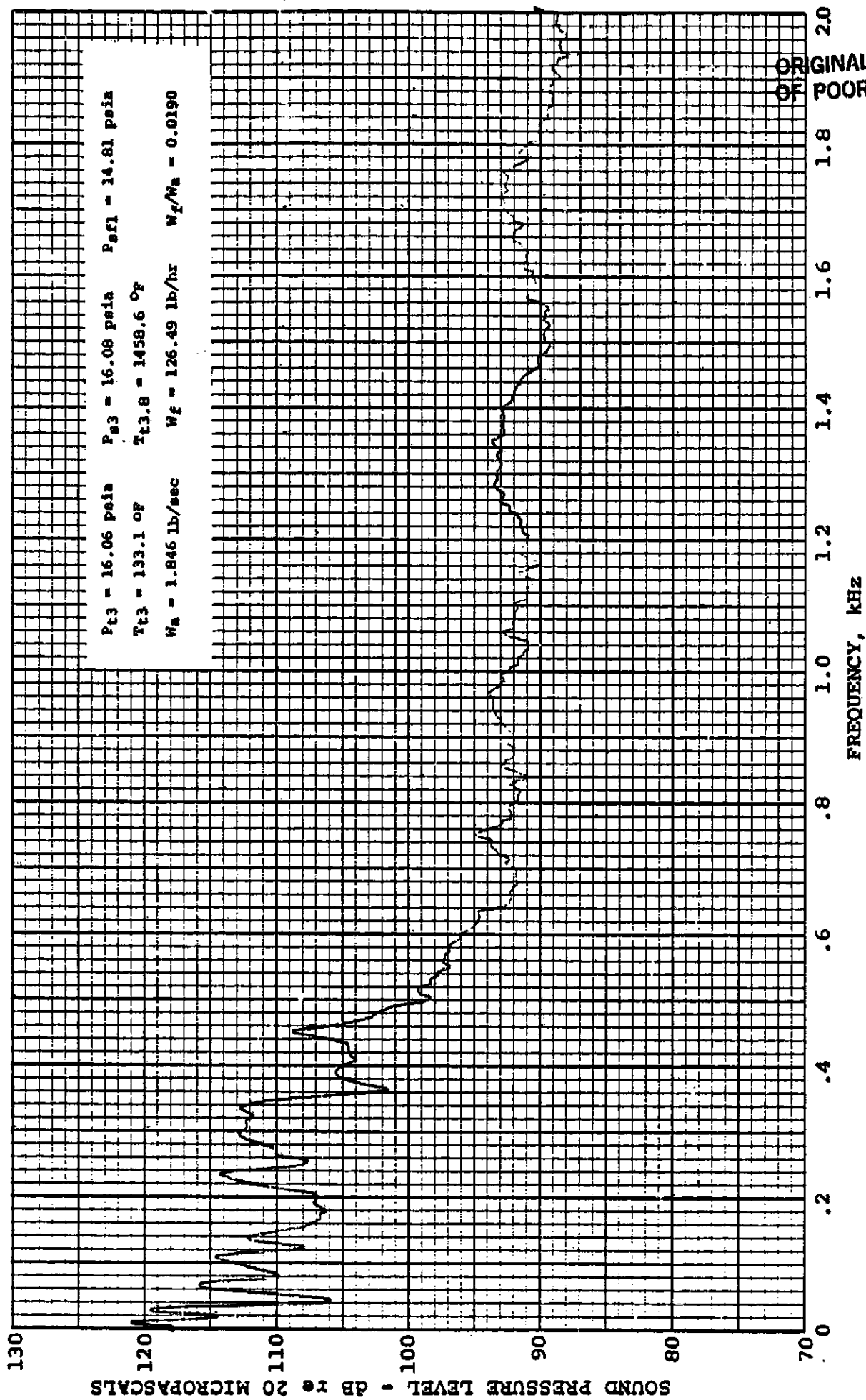
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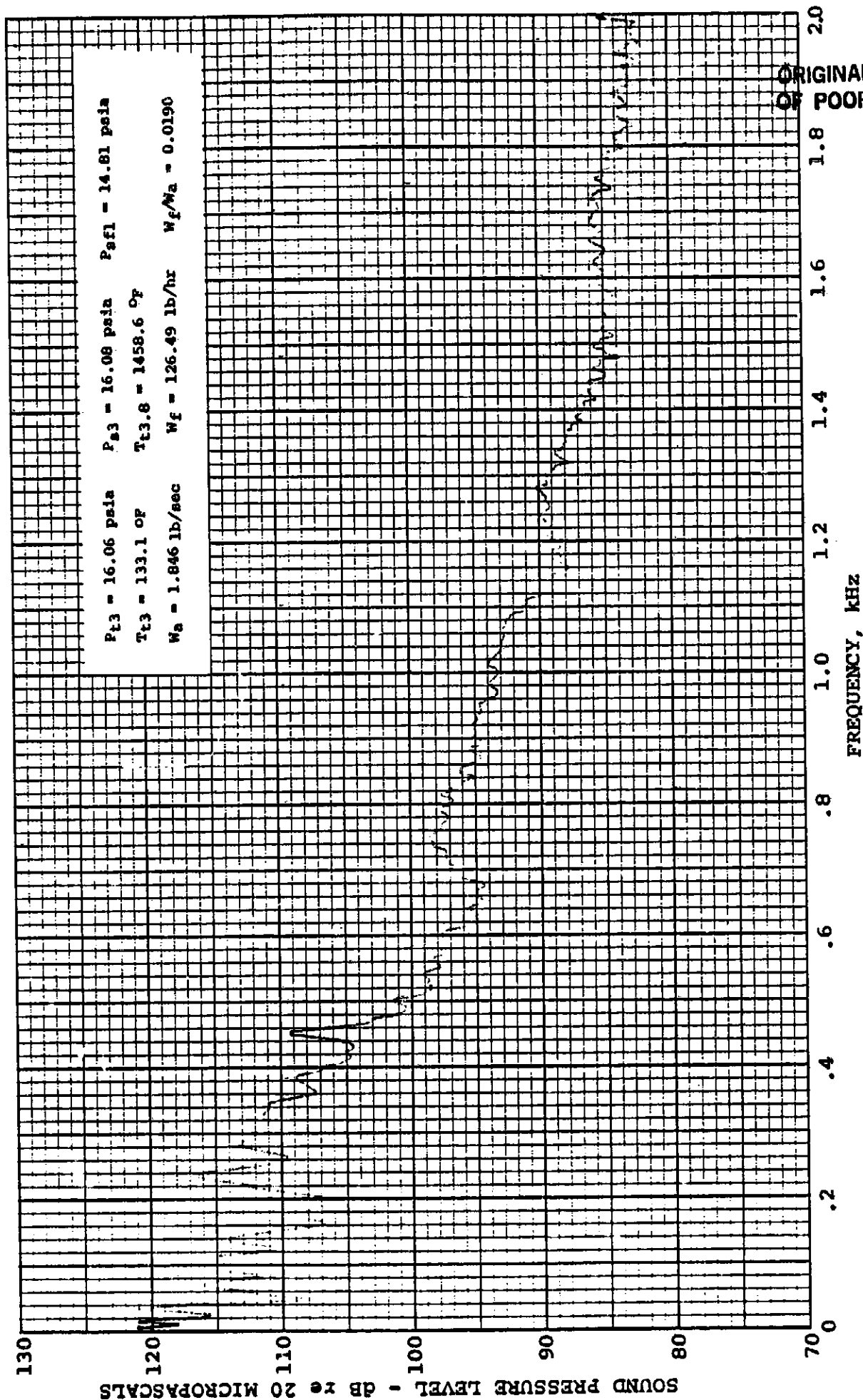
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APPENDIX C

GROUP III

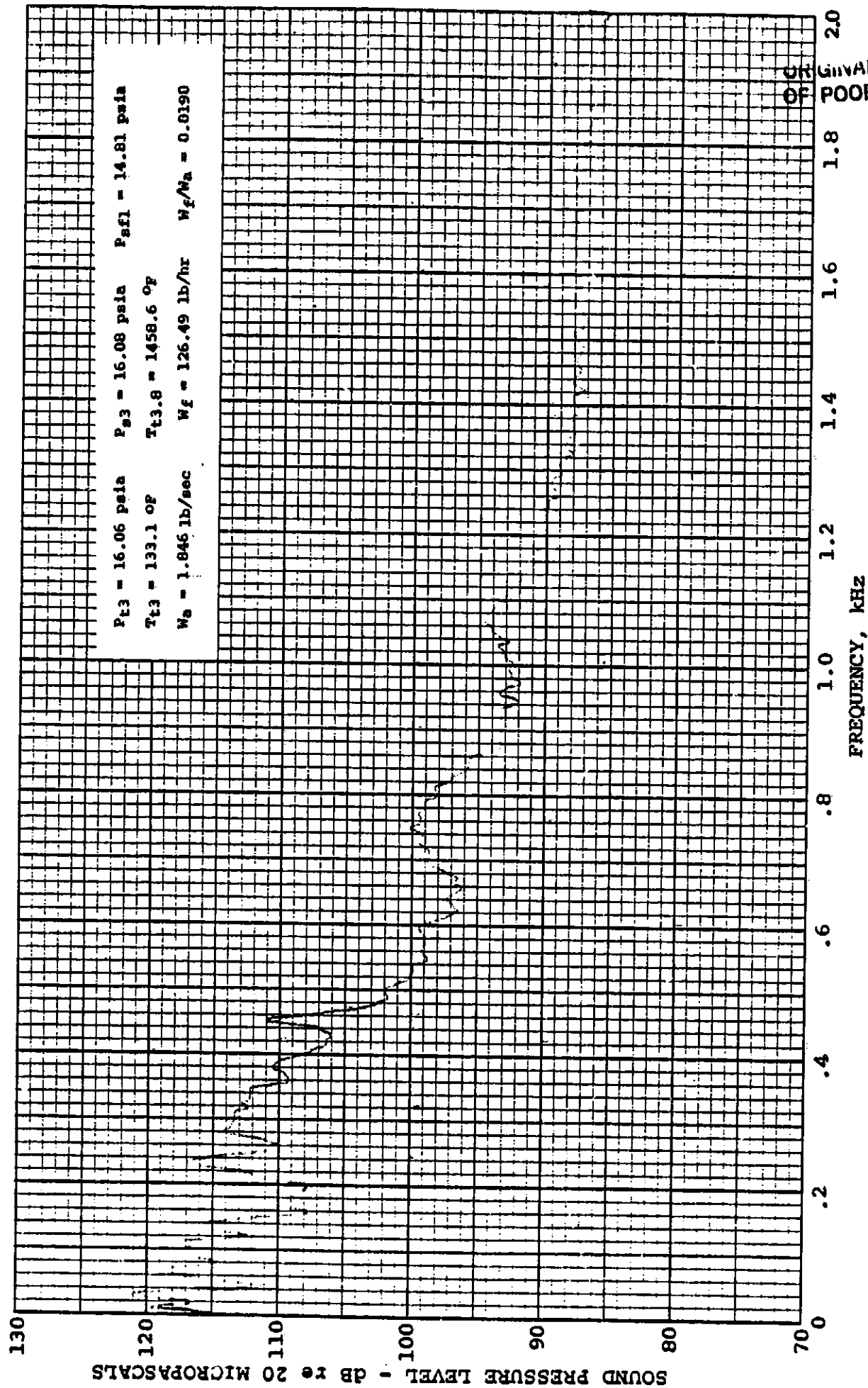


NARROW BAND SPECTRUM AT PROBE NUMBER 1 DURING RUN POINT NUMBER 131

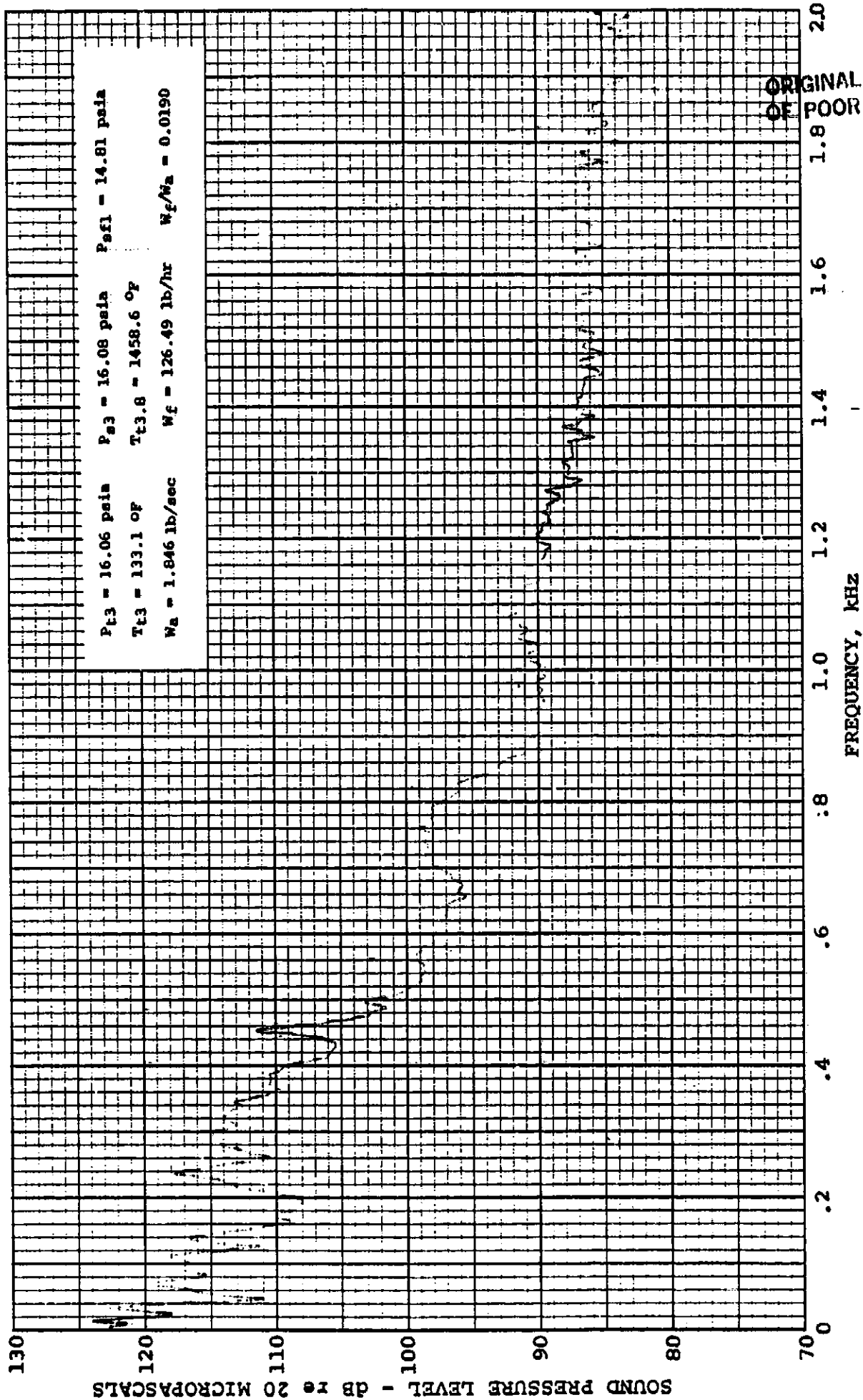


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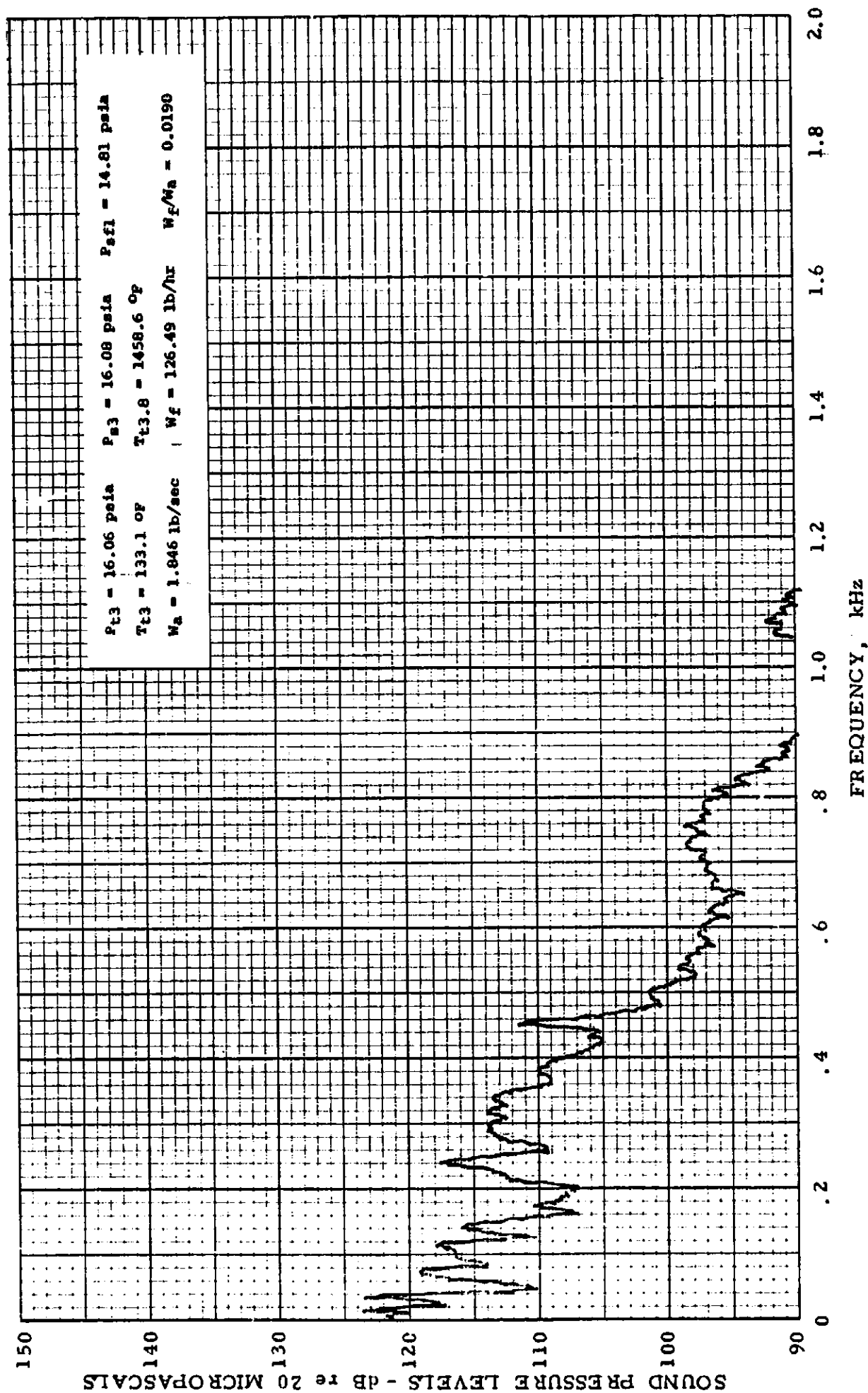


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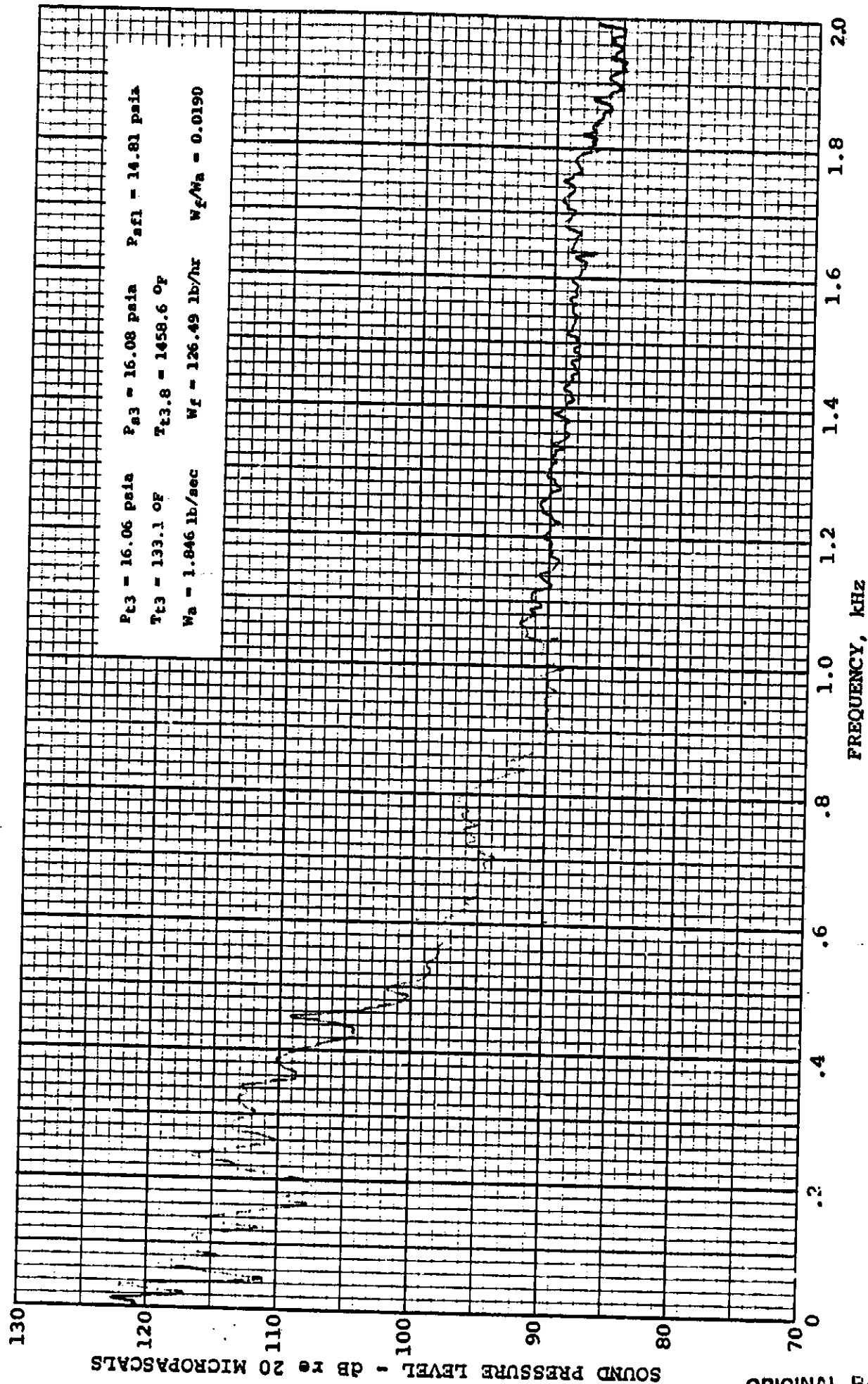


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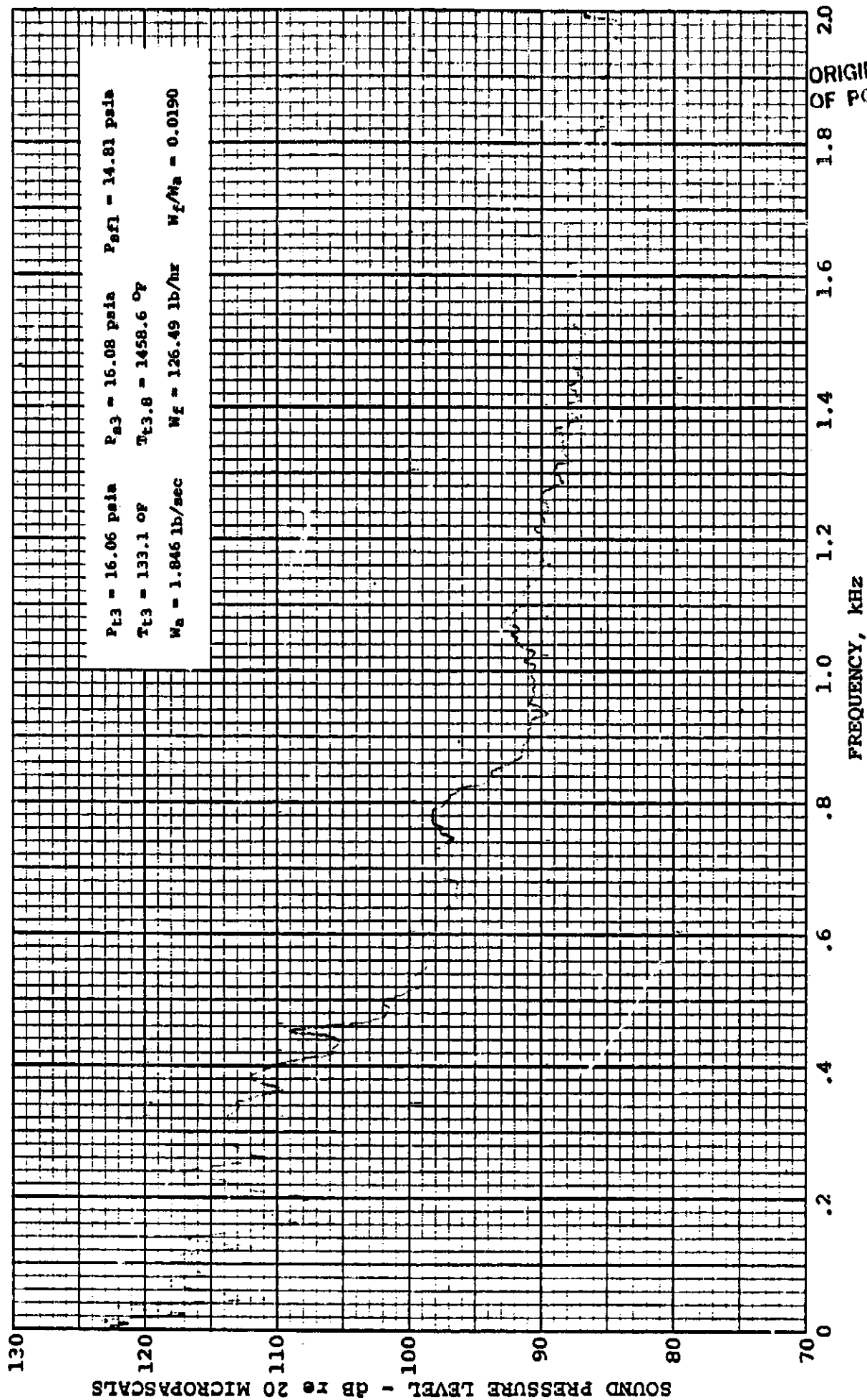
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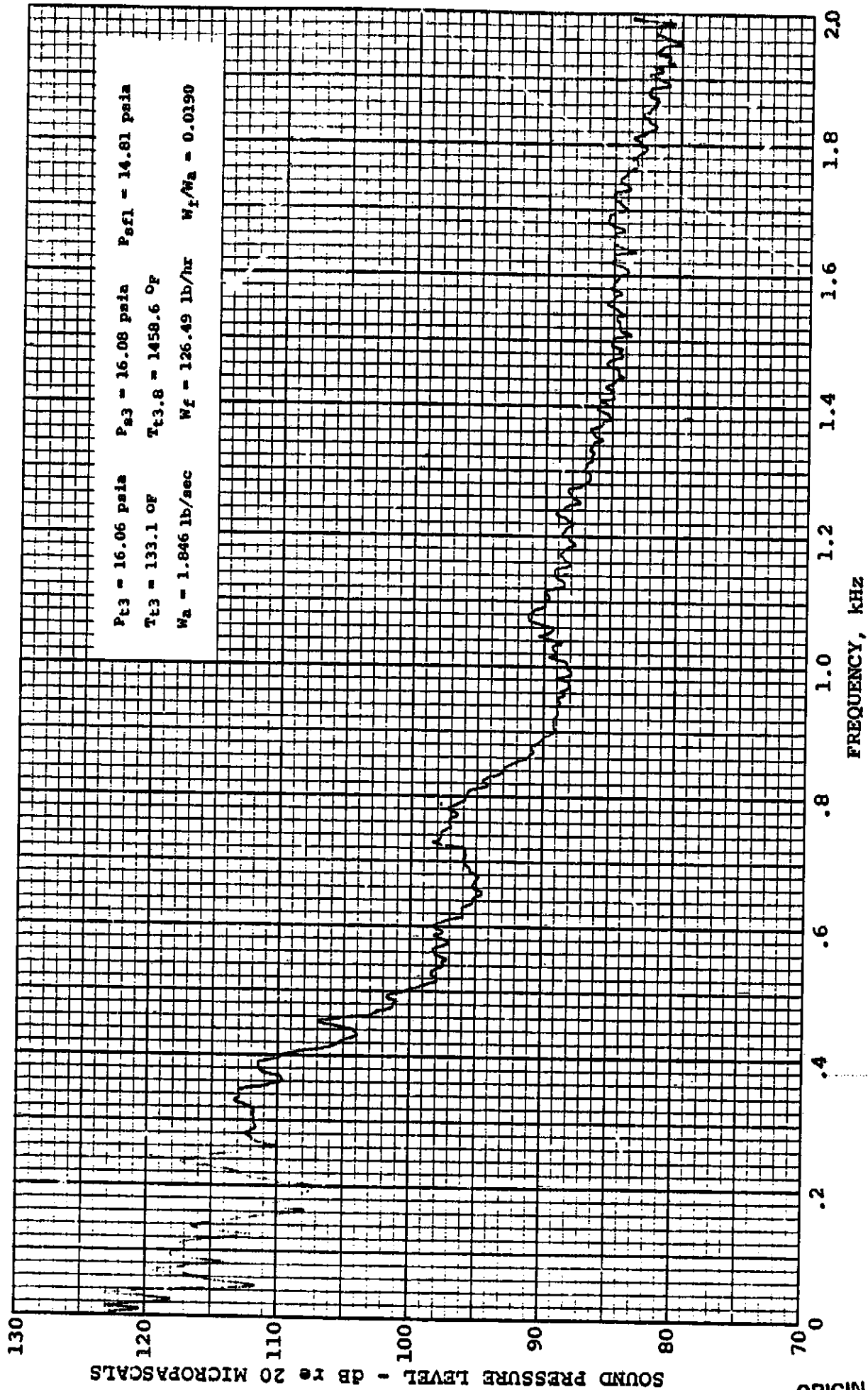


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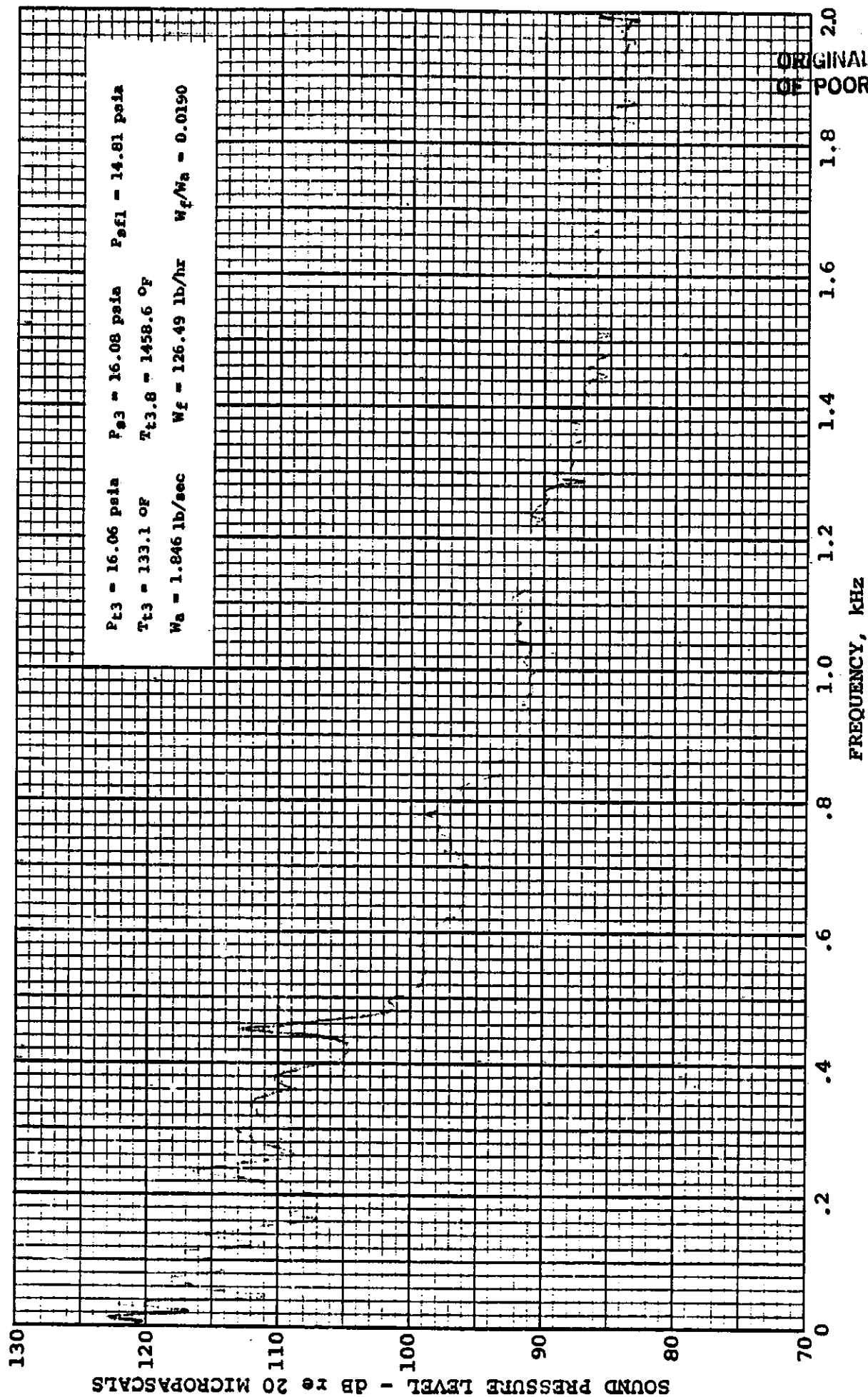


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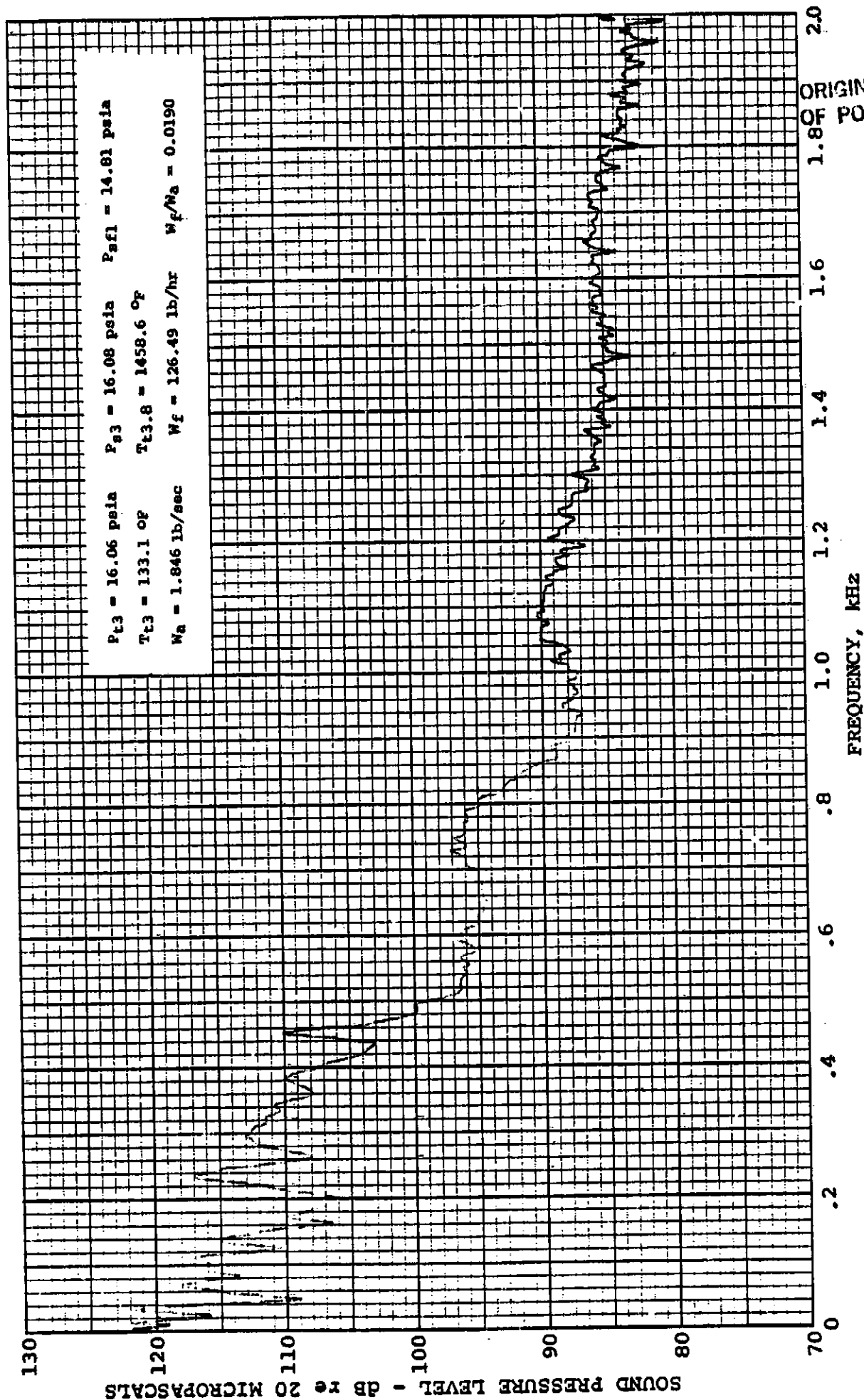


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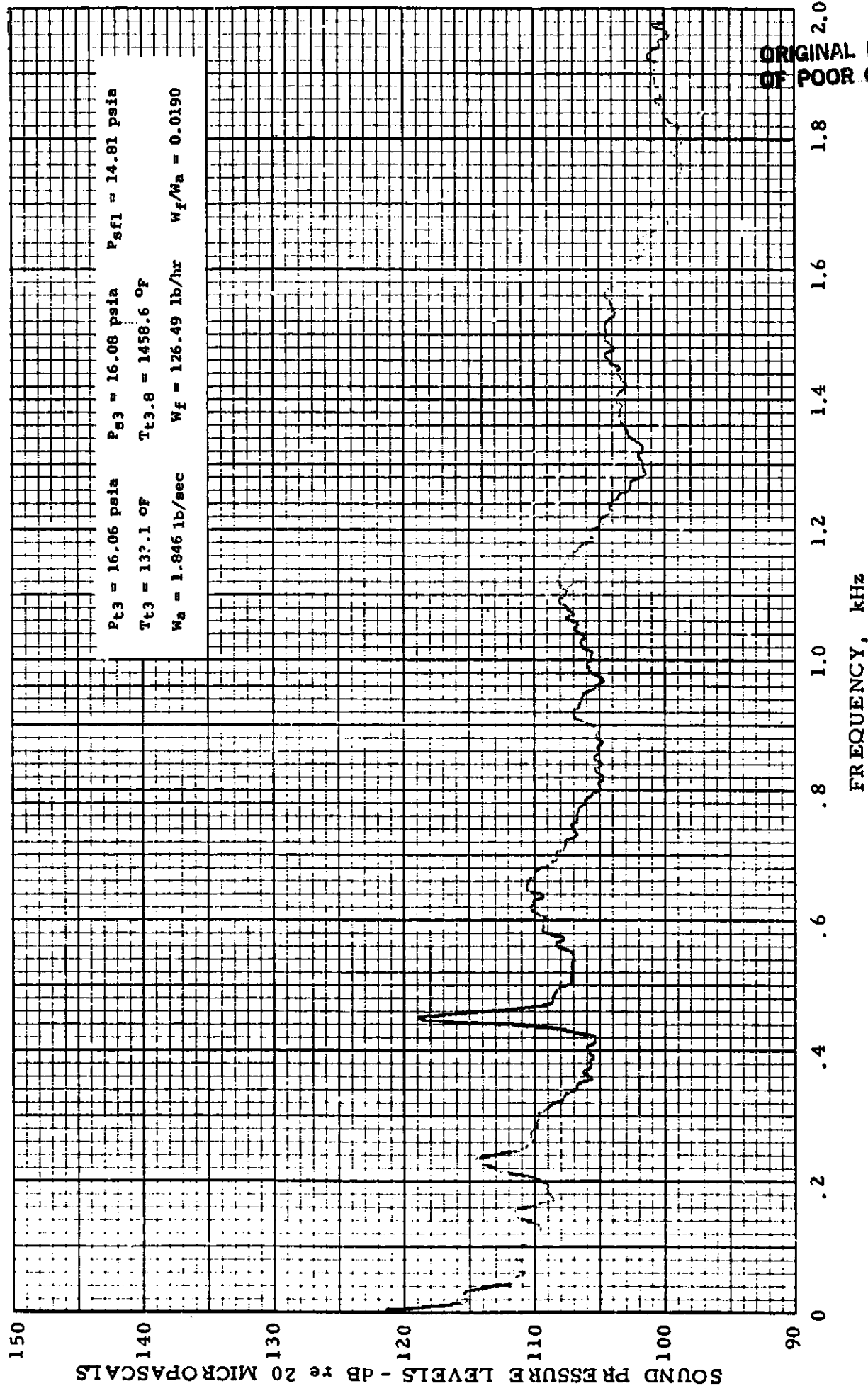
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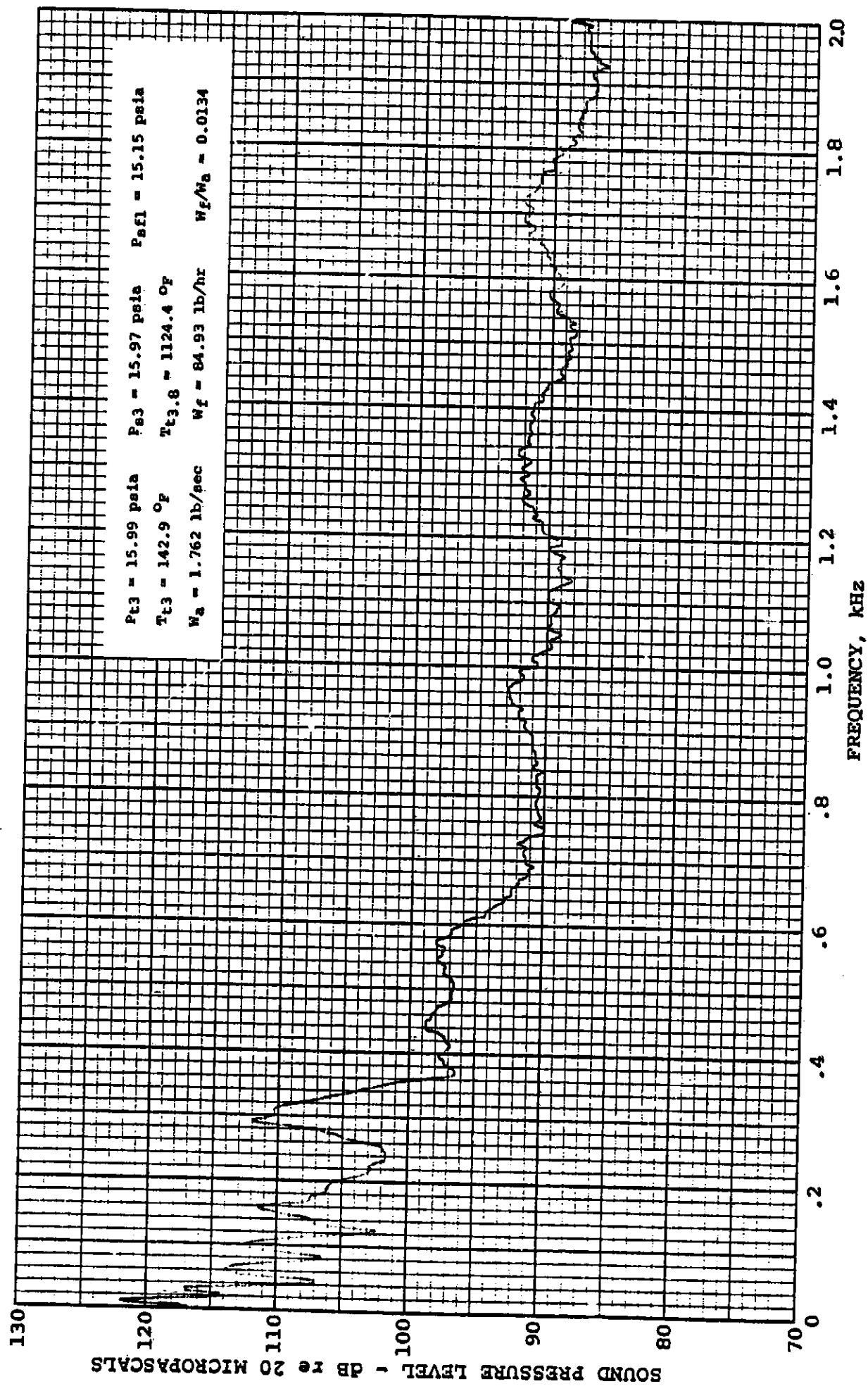
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NARROW BAND SPECTRUM AT PROBE NUMBER 9 DURING RUN POINT NUMBER 131

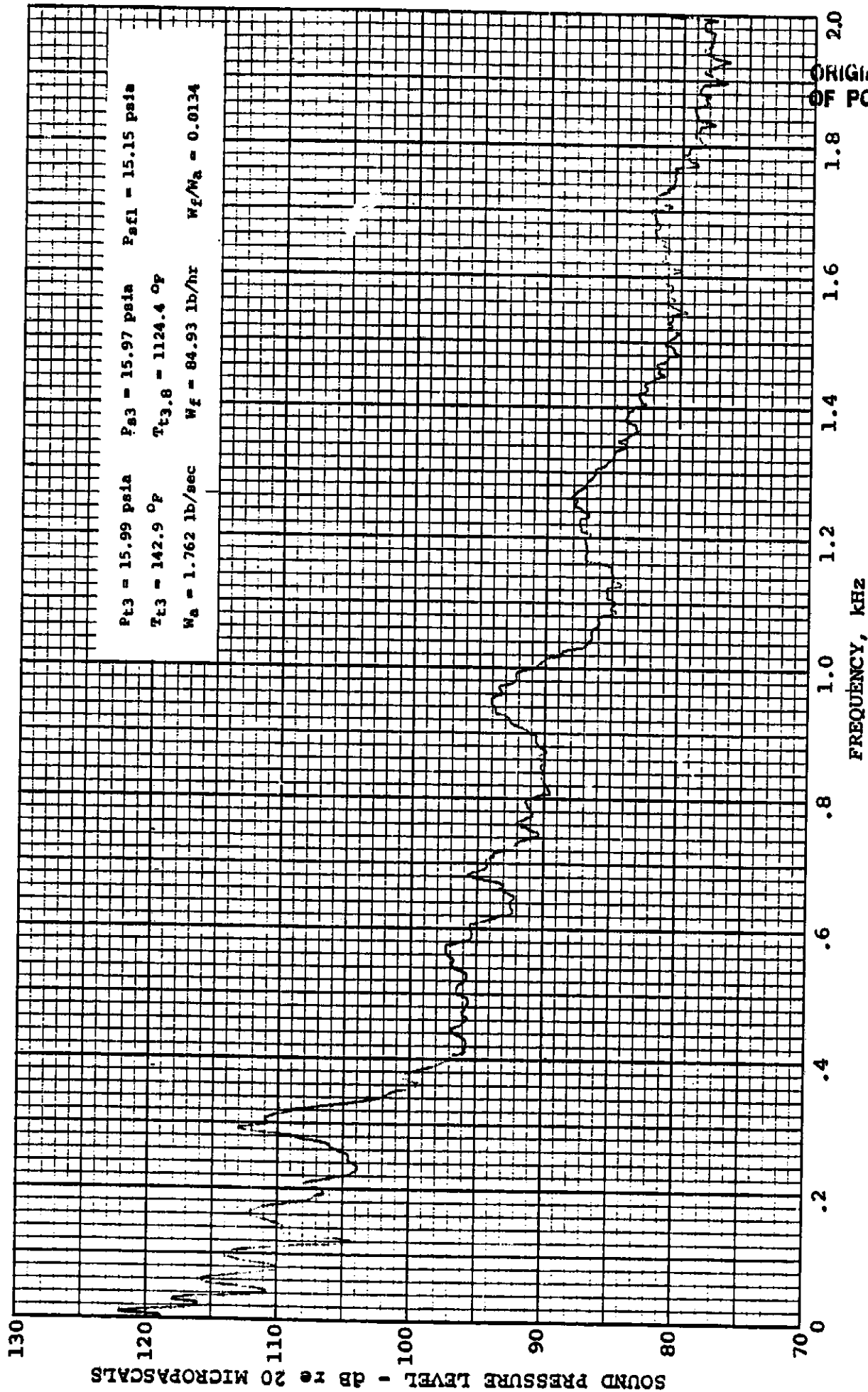


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NARROW BAND SPECTRUM AT PROBE NUMBER 10 DURING RUN POINT NUMBER 131

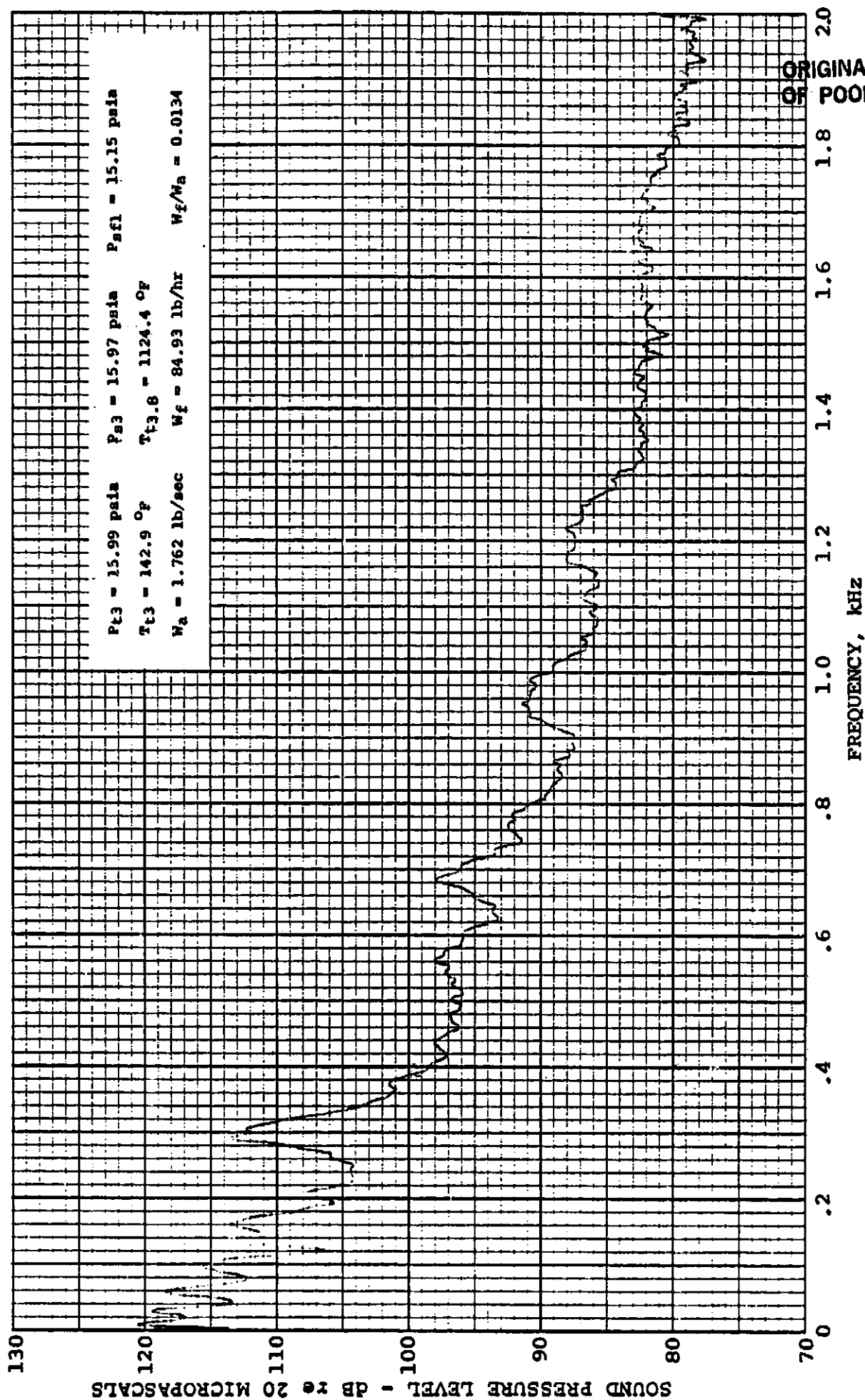


NARROW BAND SPECTRUM AT PROBE NUMBER 1 DURING RUN POINT NUMBER 134



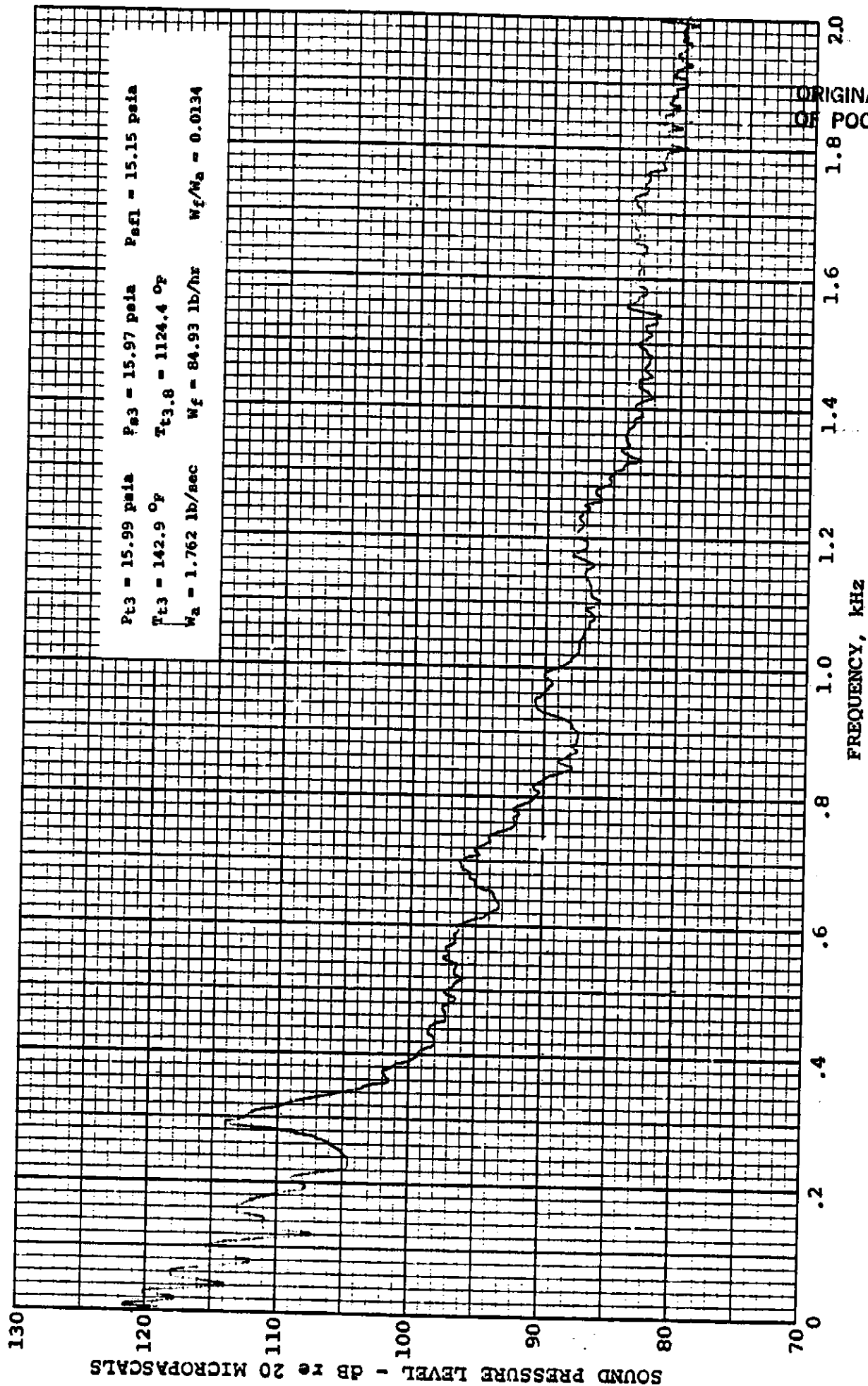
NARROW BAND SPECTRUM AT PROBE NUMBER 2 DURING RUN POINT NUMBER 134

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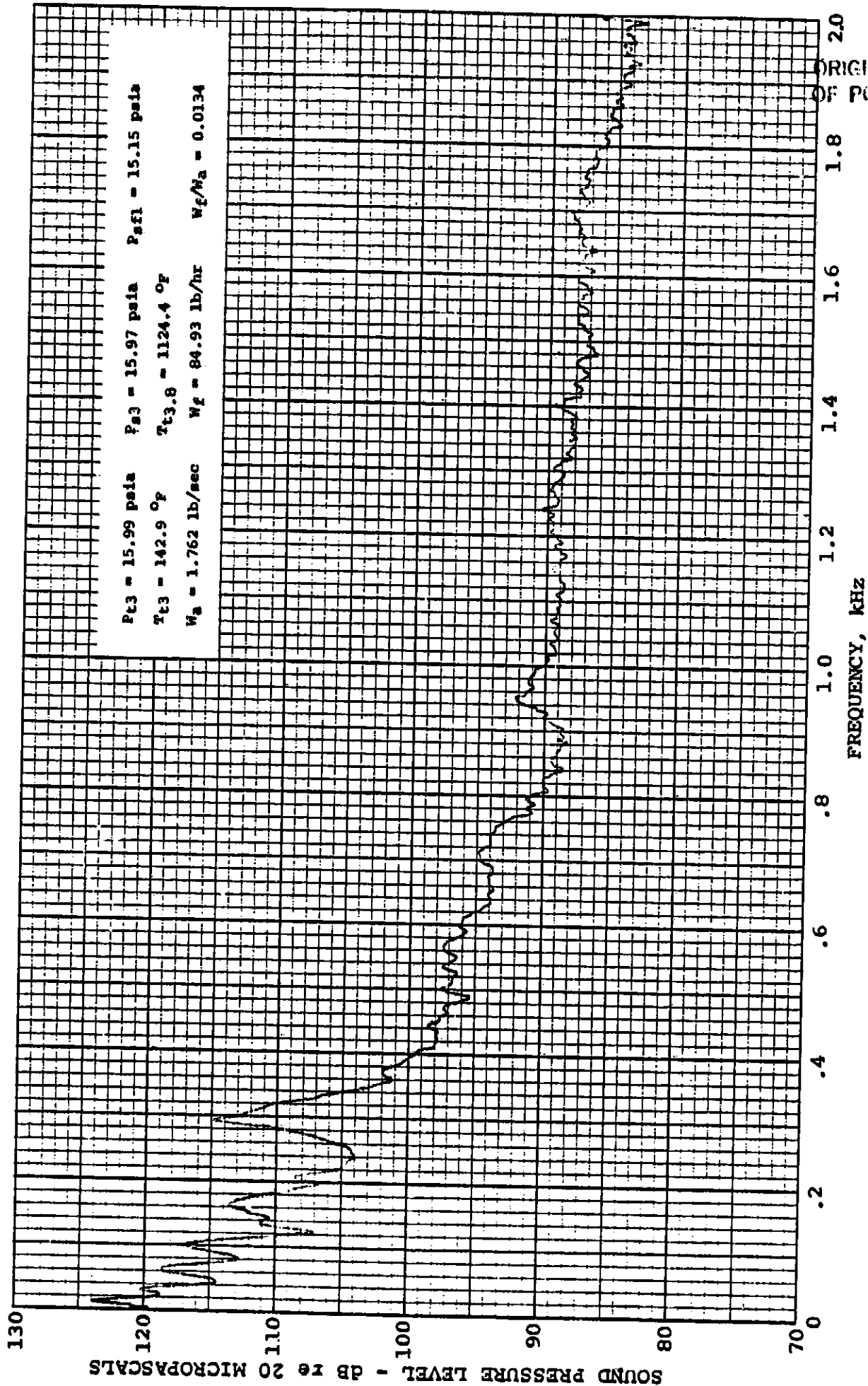
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NARROW BAND SPECTRUM AT PROBE NUMBER 3 DURING RUN POINT NUMBER 134



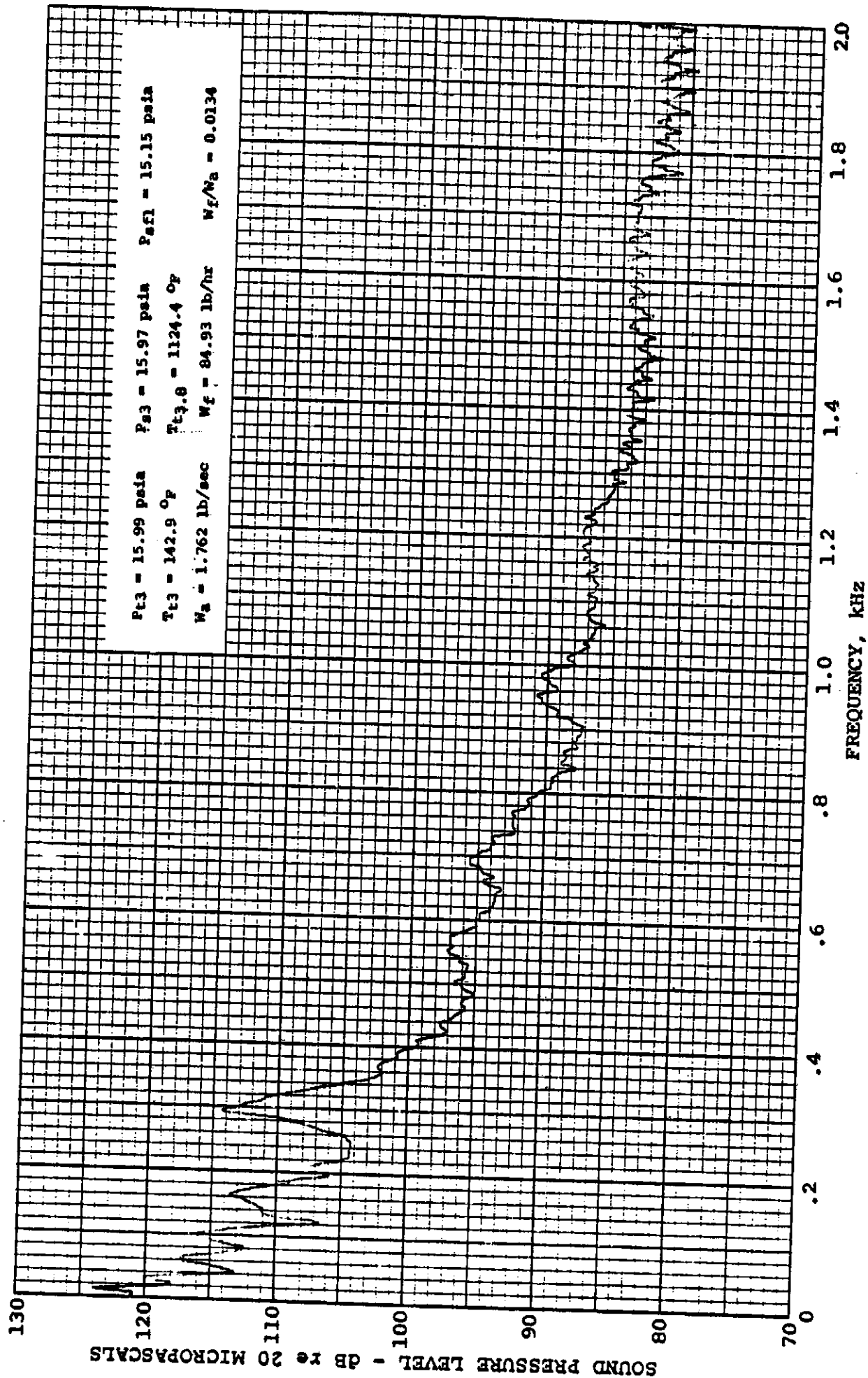
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NARROW BAND SPECTRUM AT PROBE NUMBER 4 DURING RUN POINT NUMBER 134

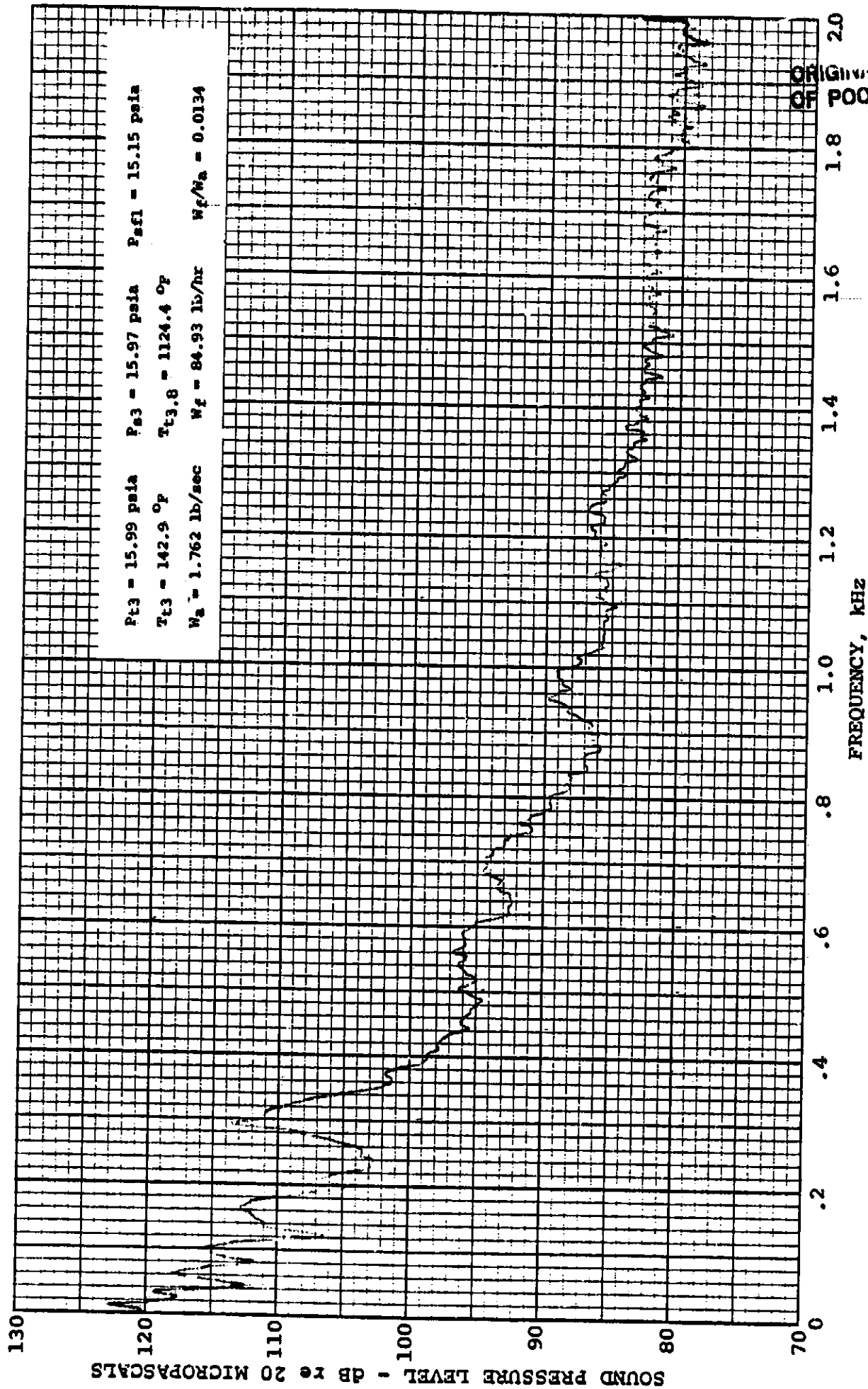


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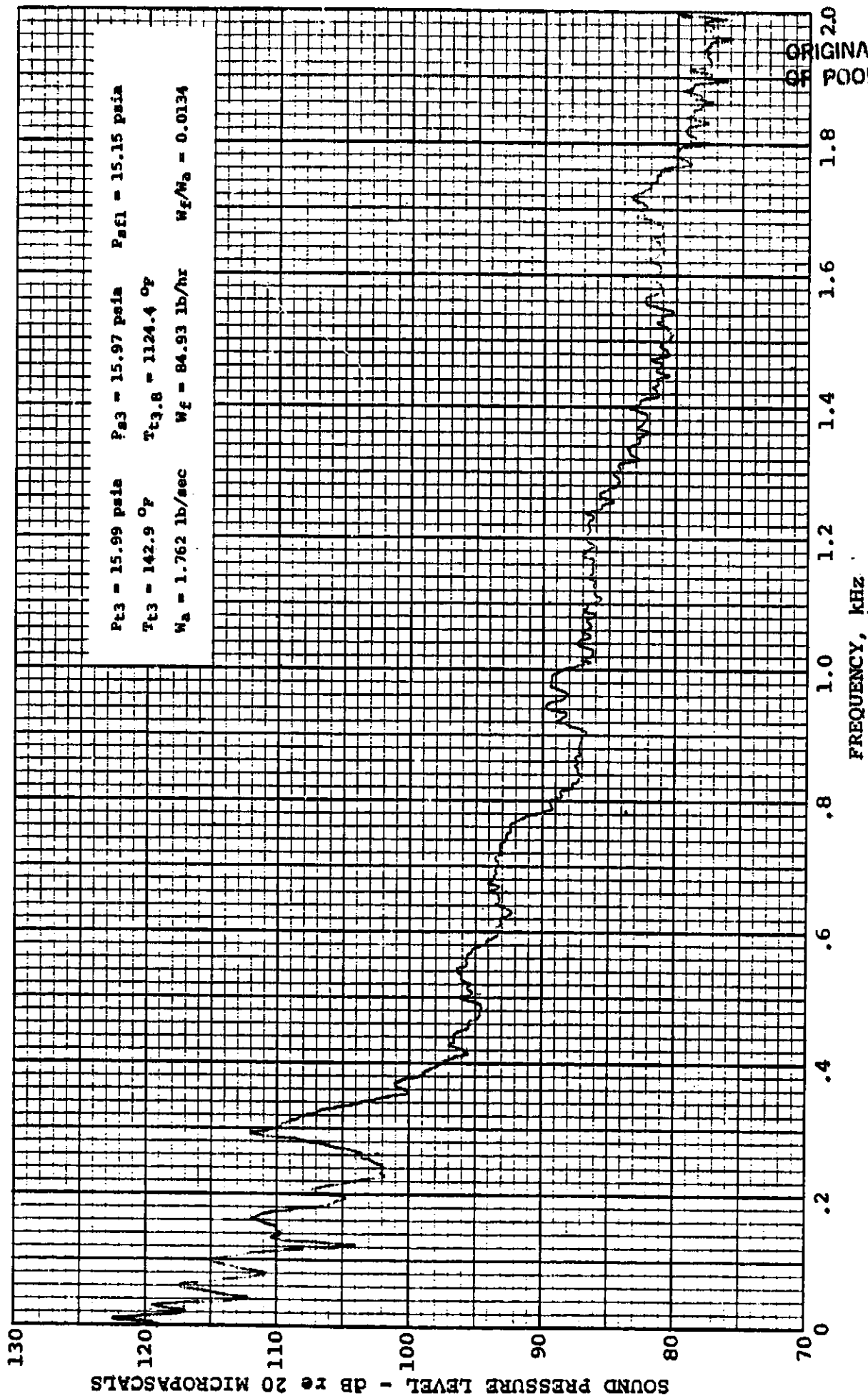
NARROW BAND SPECTRUM AT PROBE NUMBER 5 DURING RUN POINT NUMBER 134



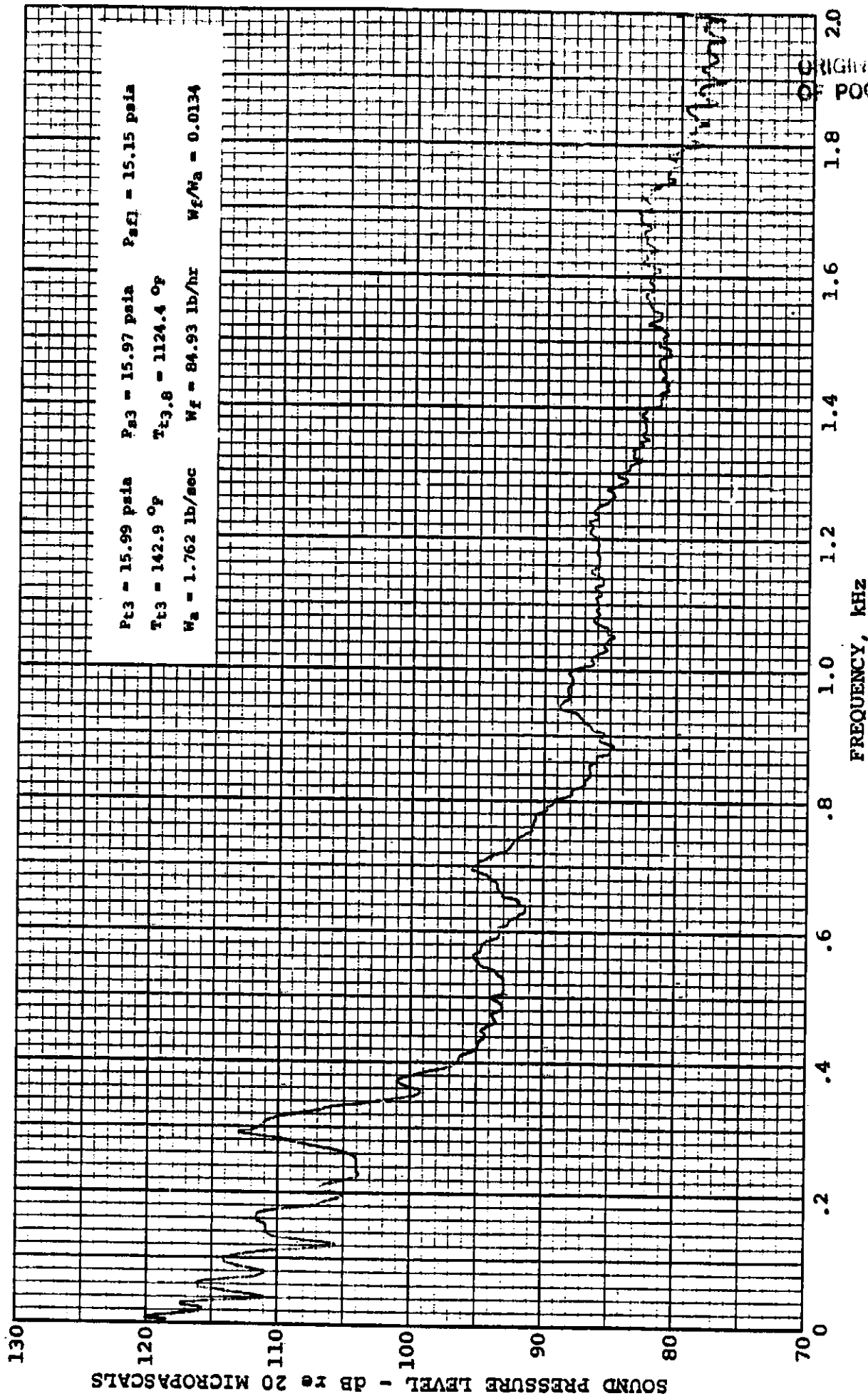
NARROW BAND SPECTRUM AT PROBE NUMBER 6 DURING RUN POINT NUMBER 134



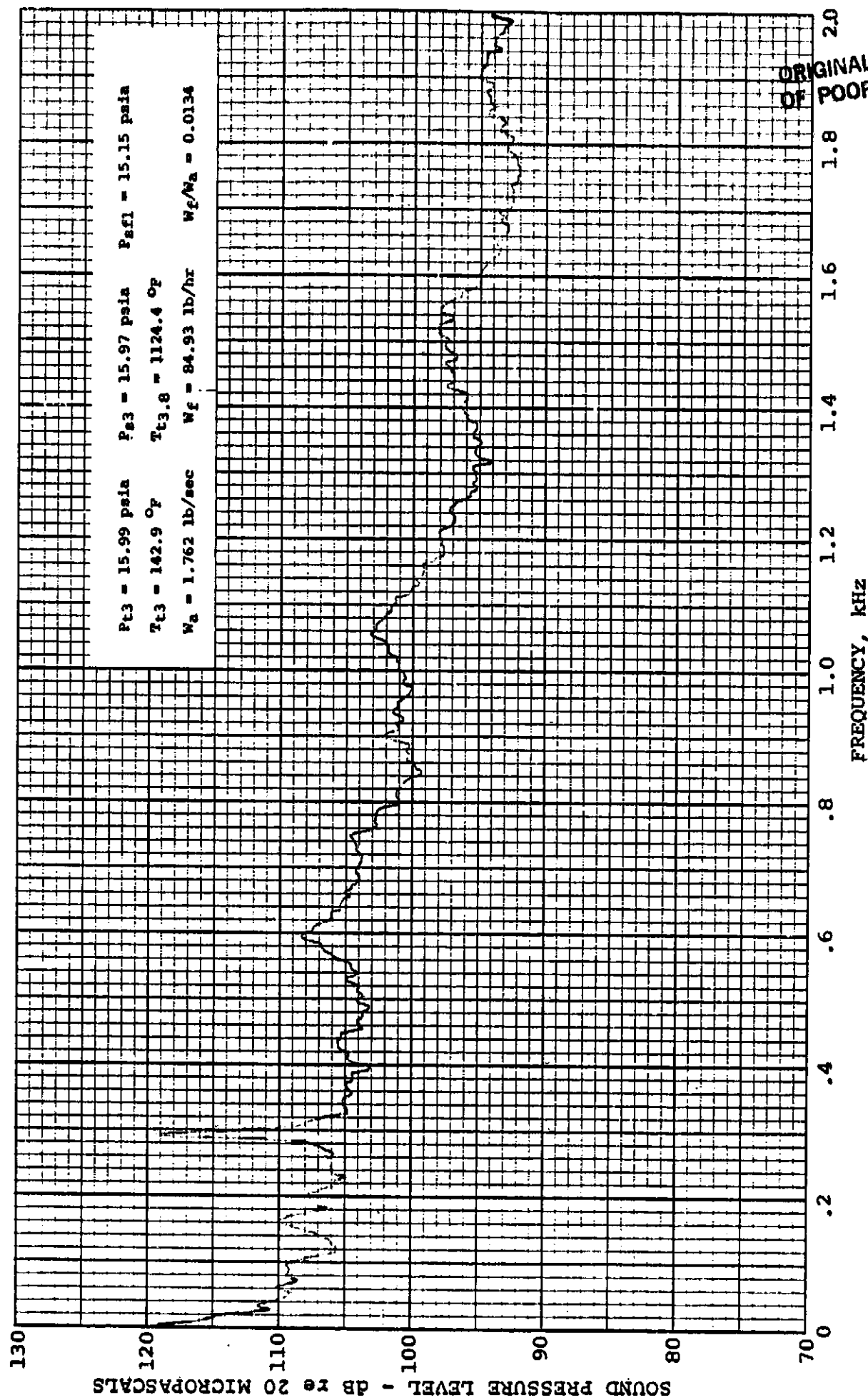
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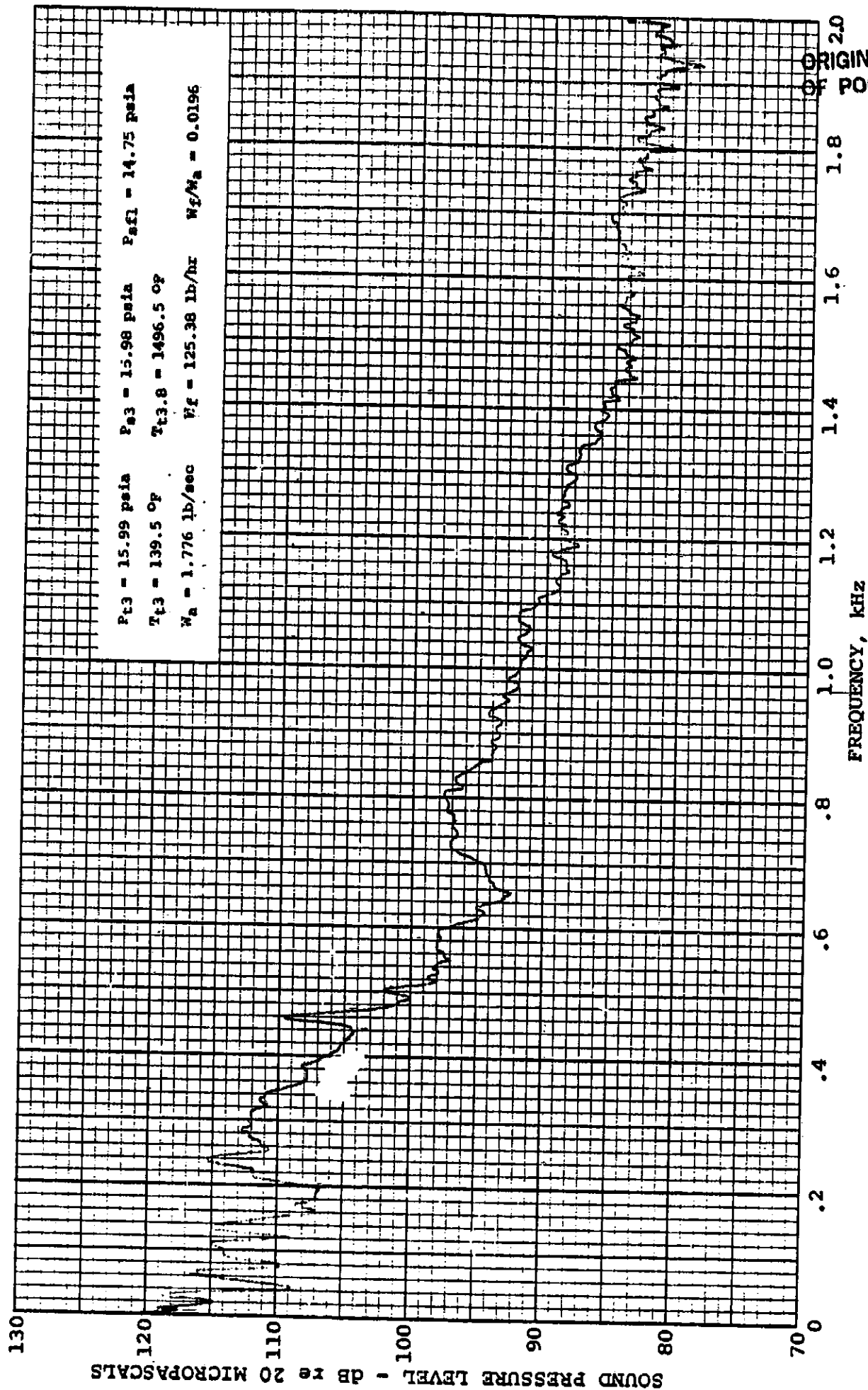


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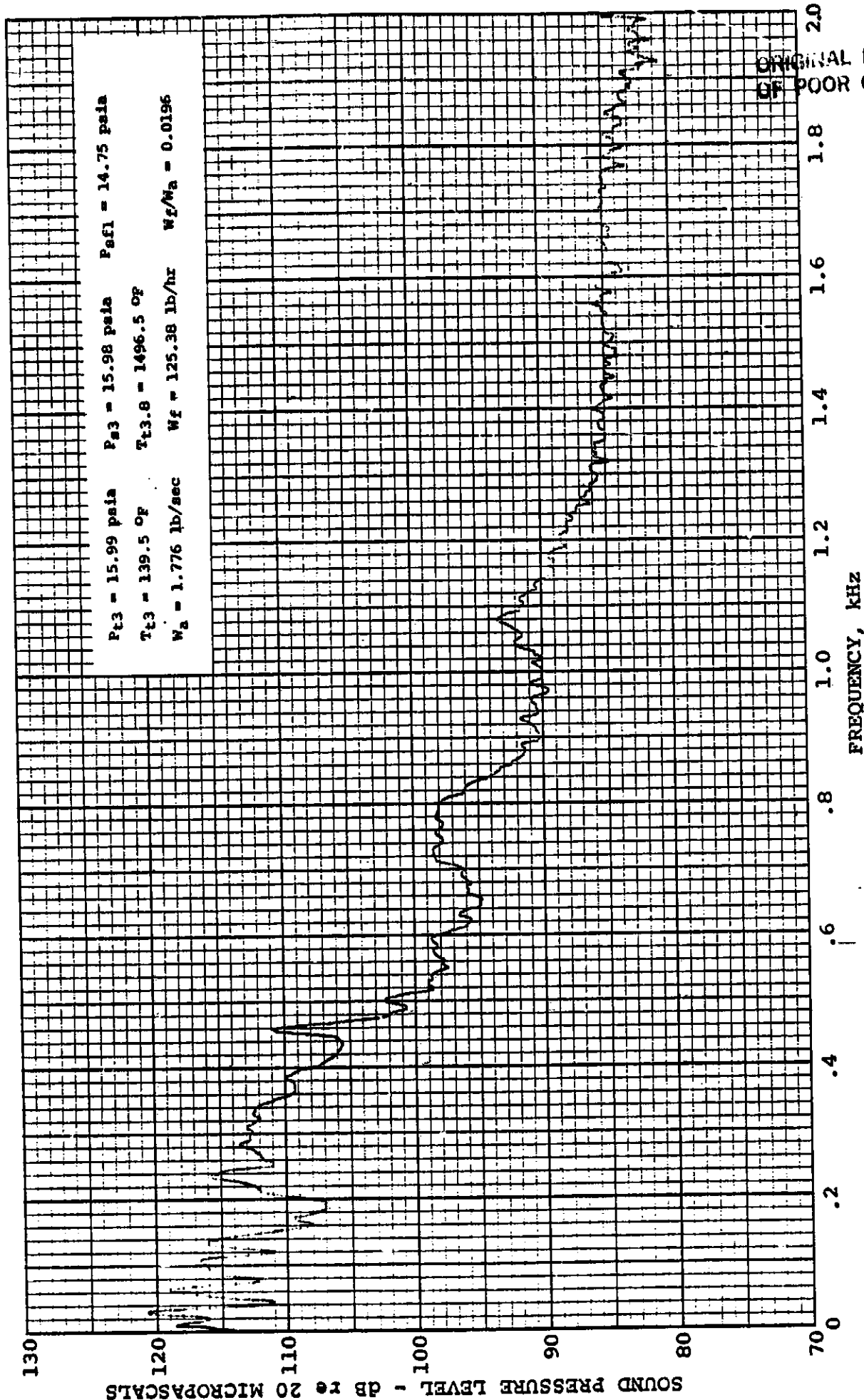
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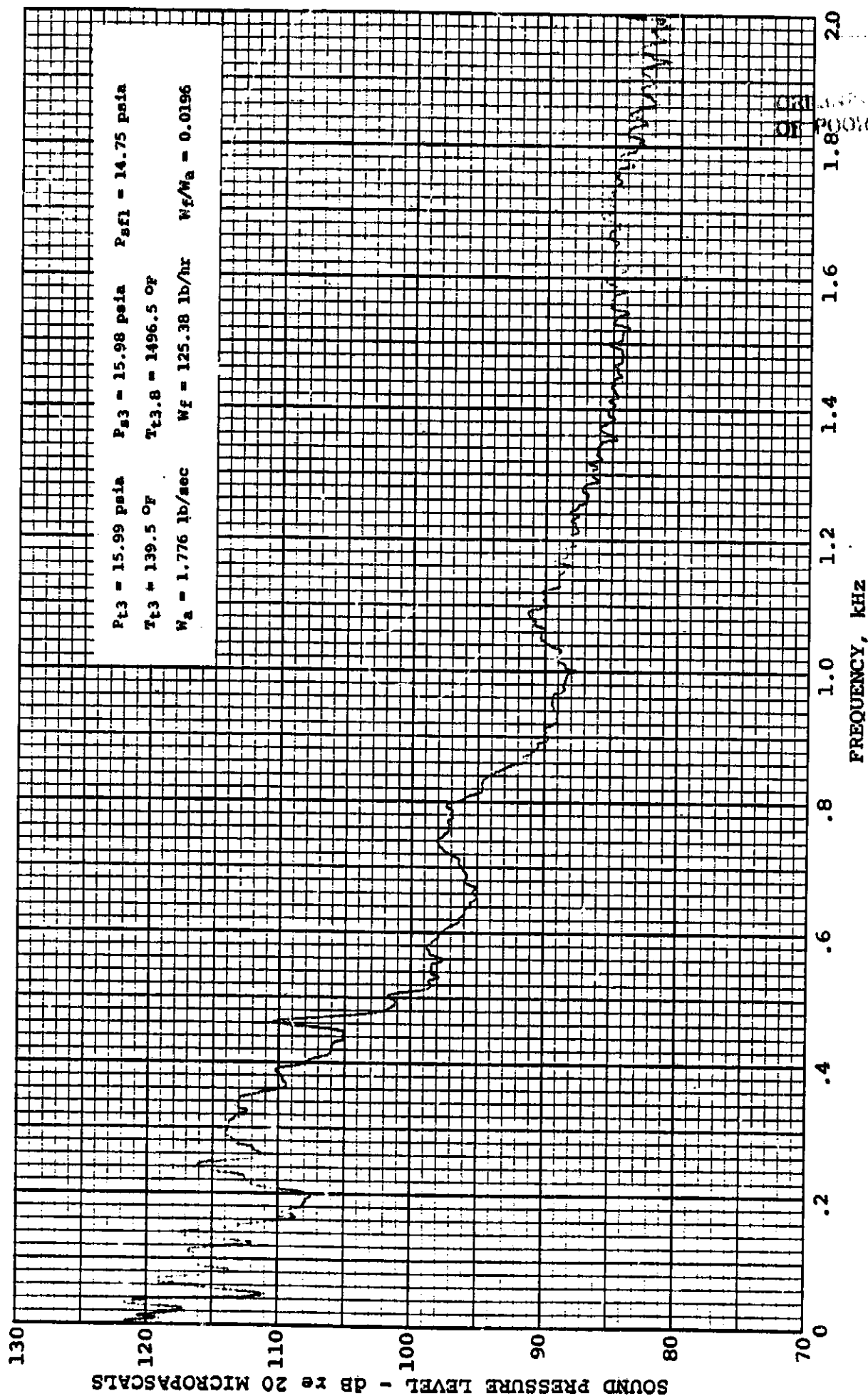
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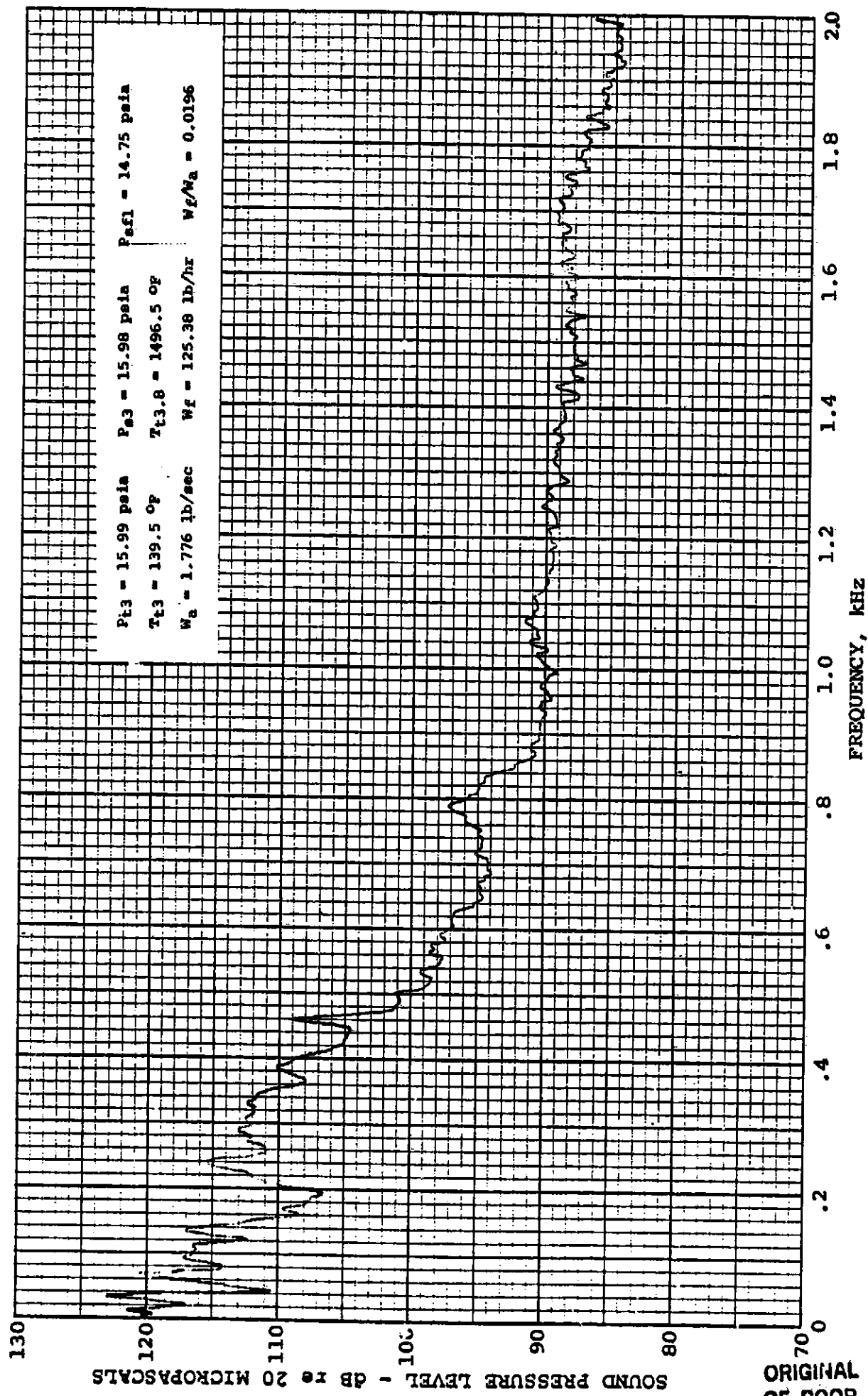


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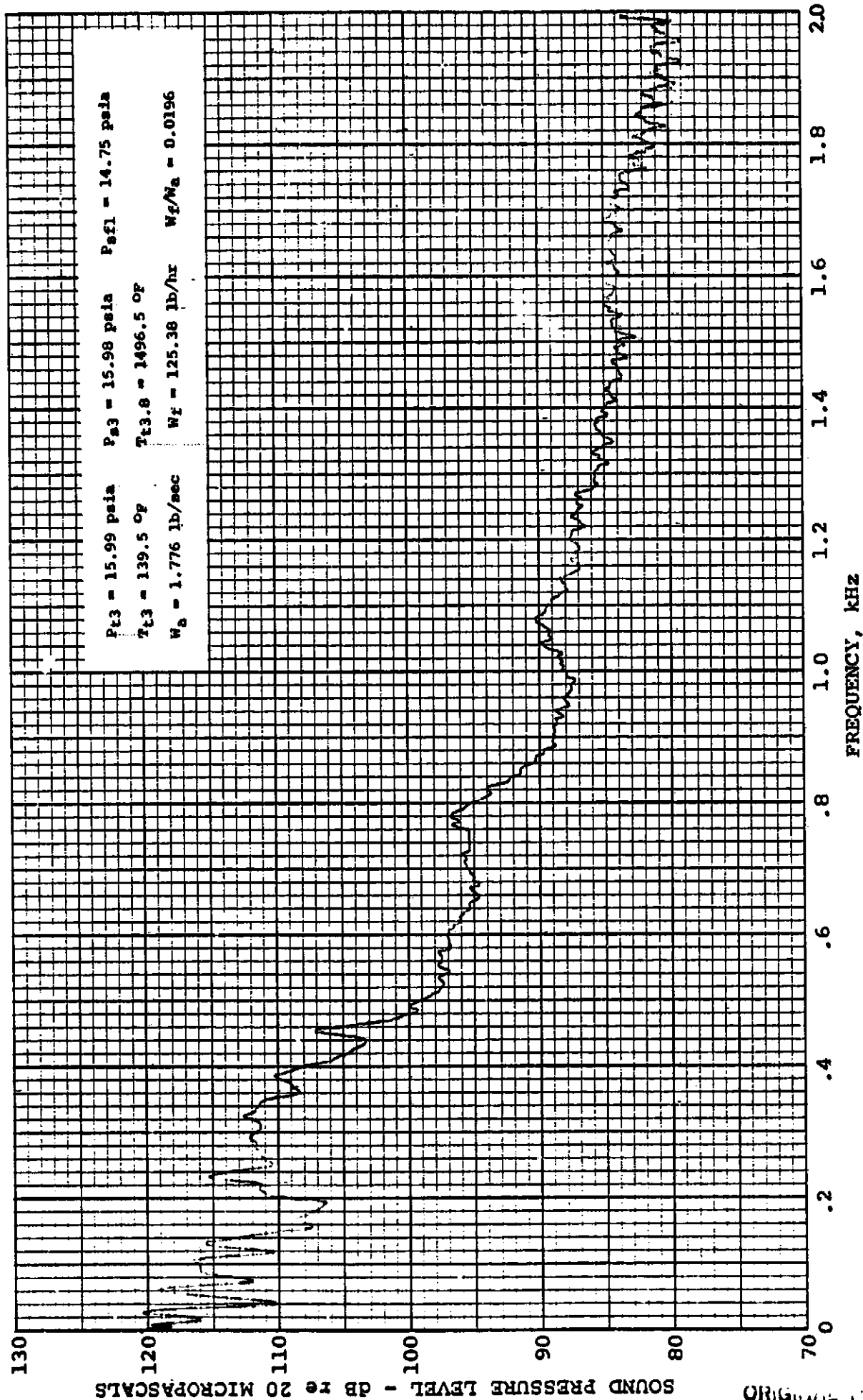
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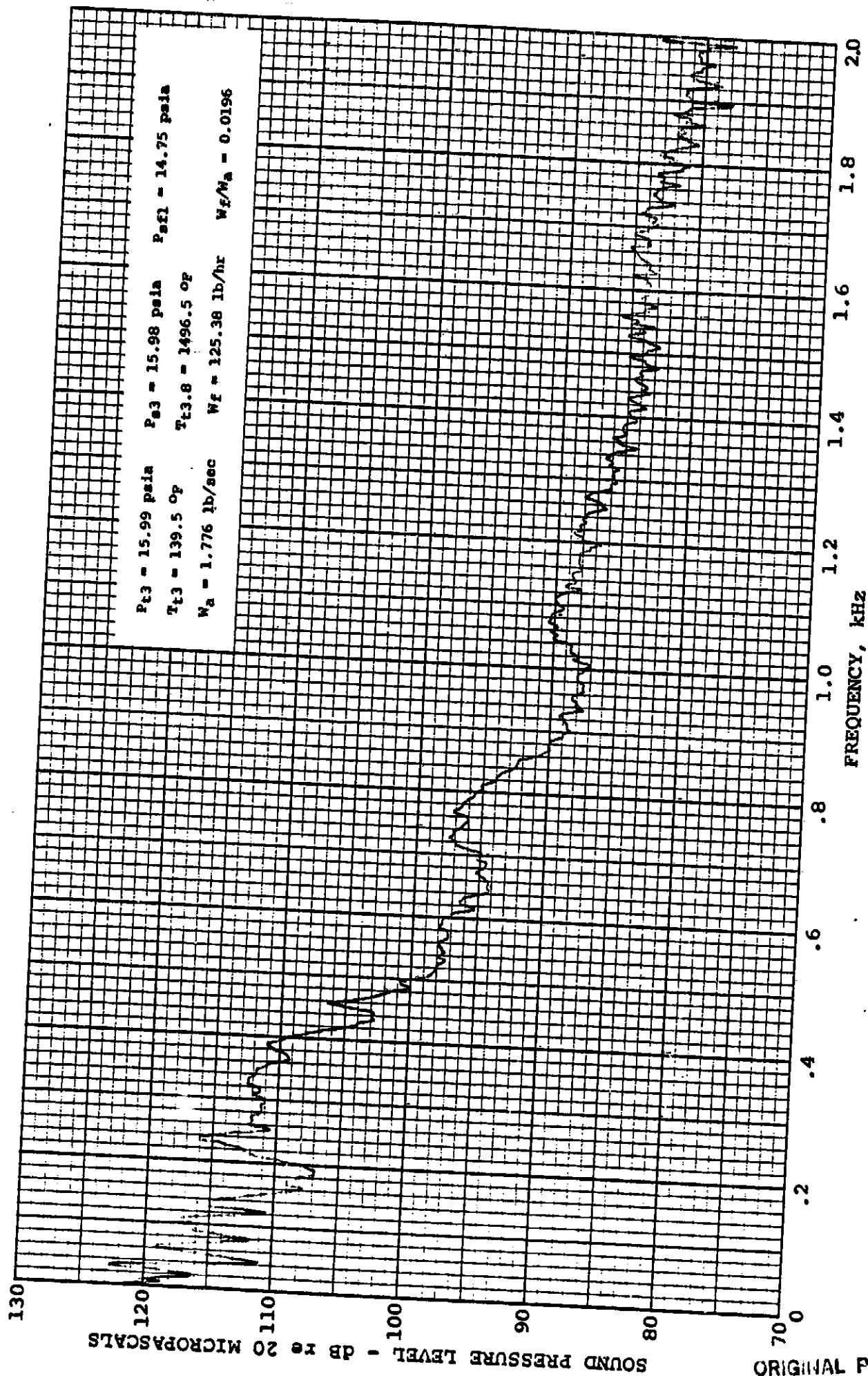
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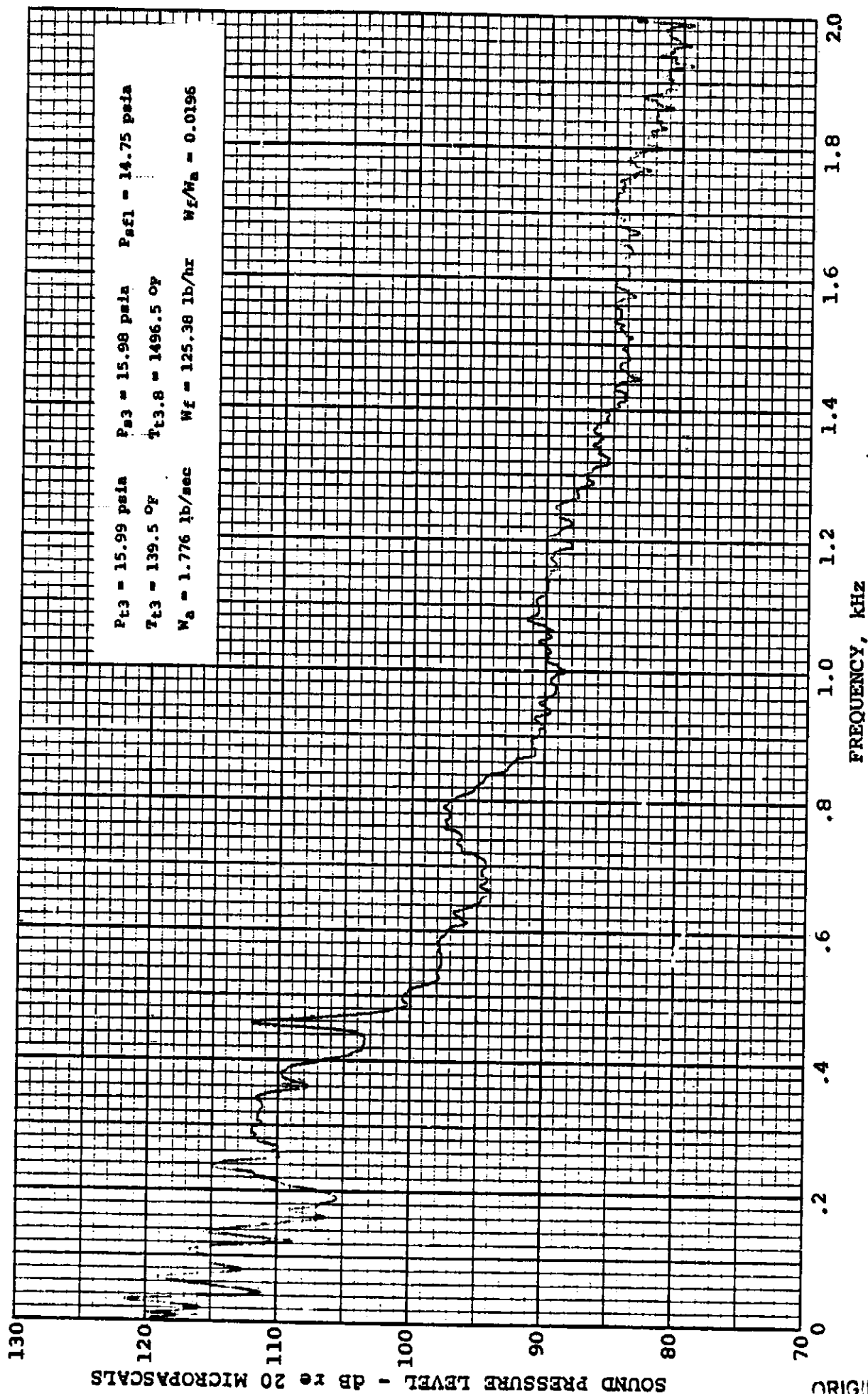
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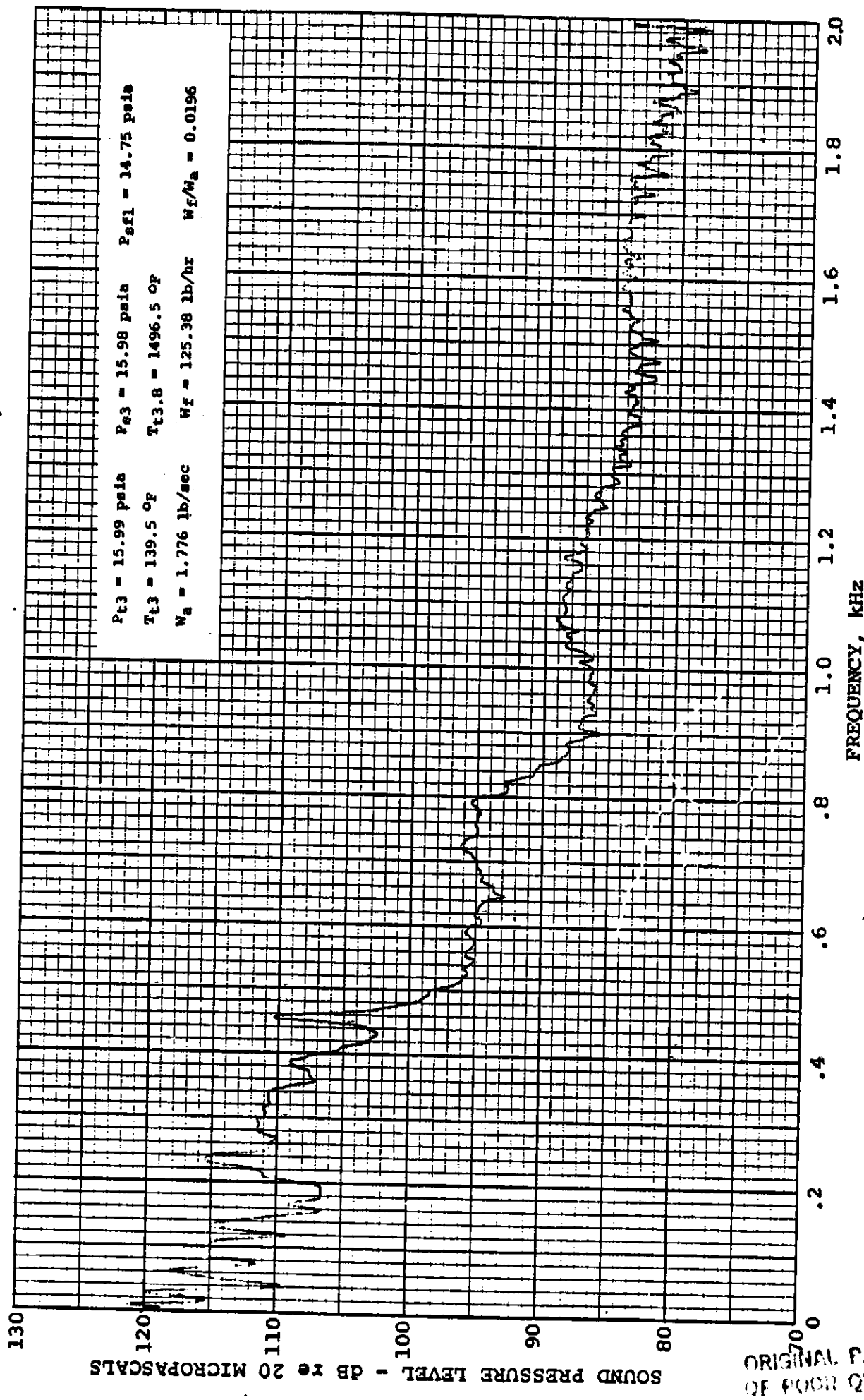
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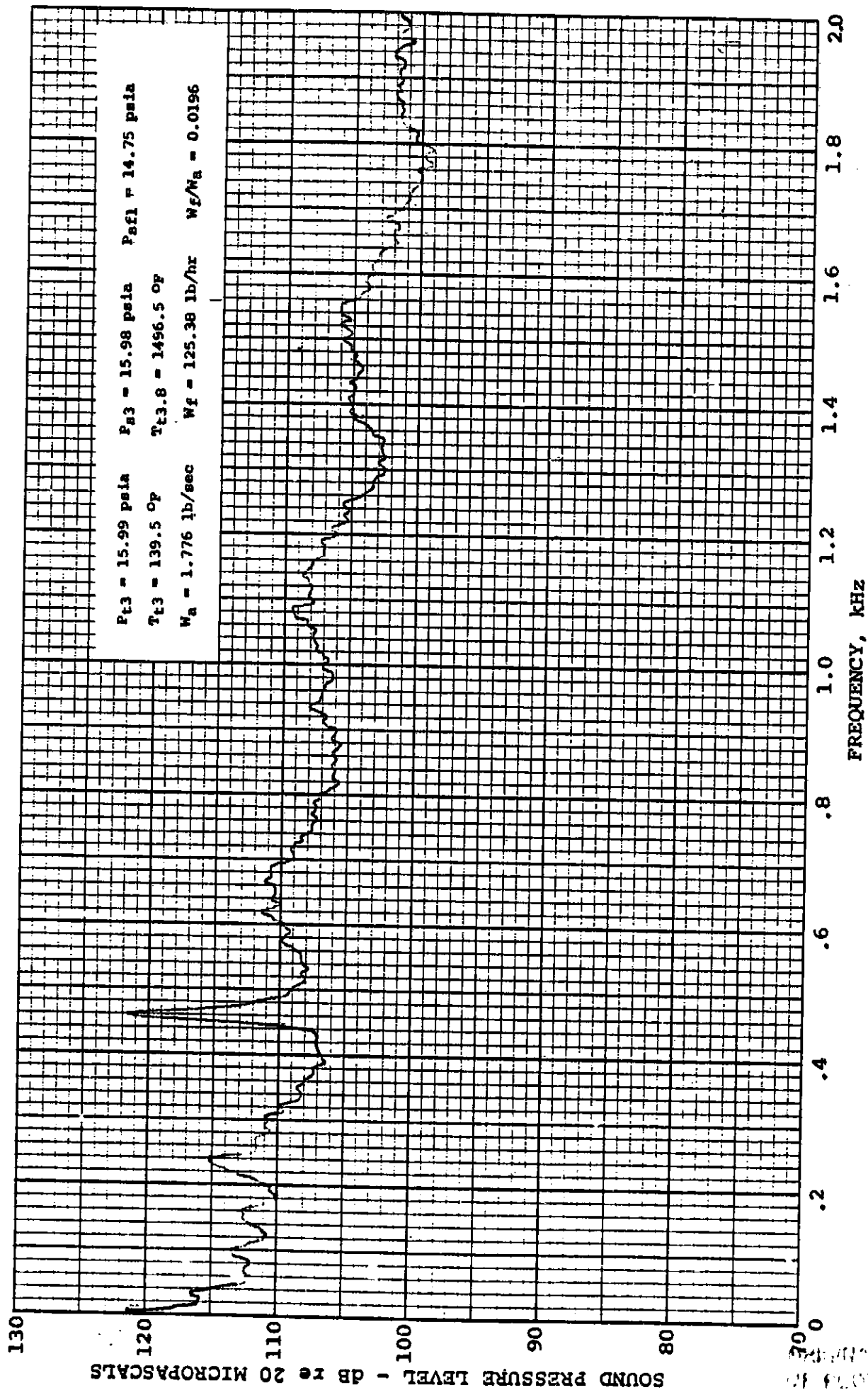
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NARROW BAND SPECTRUM AT PROBE NUMBER 8 DURING RUN POINT NUMBER 135



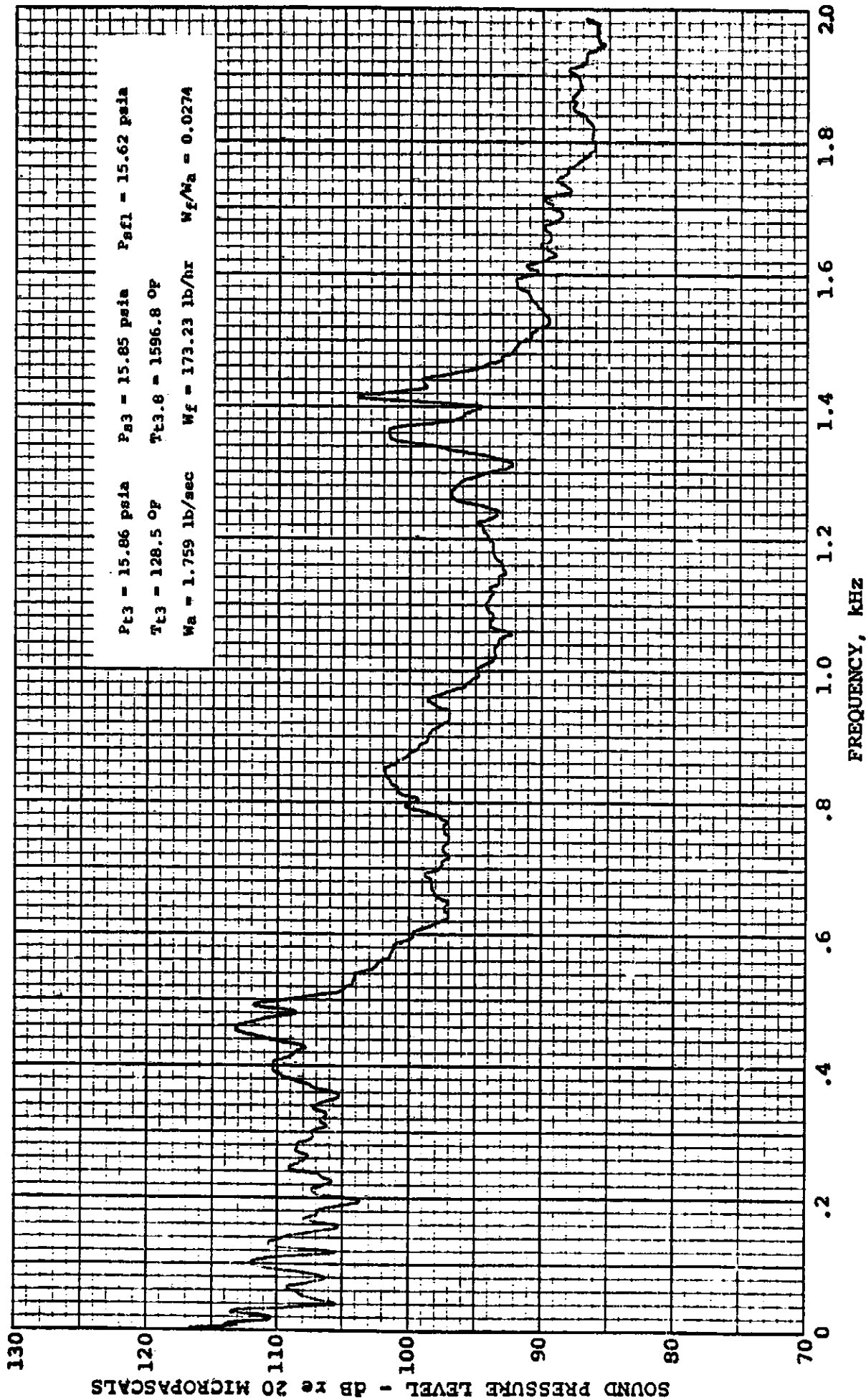
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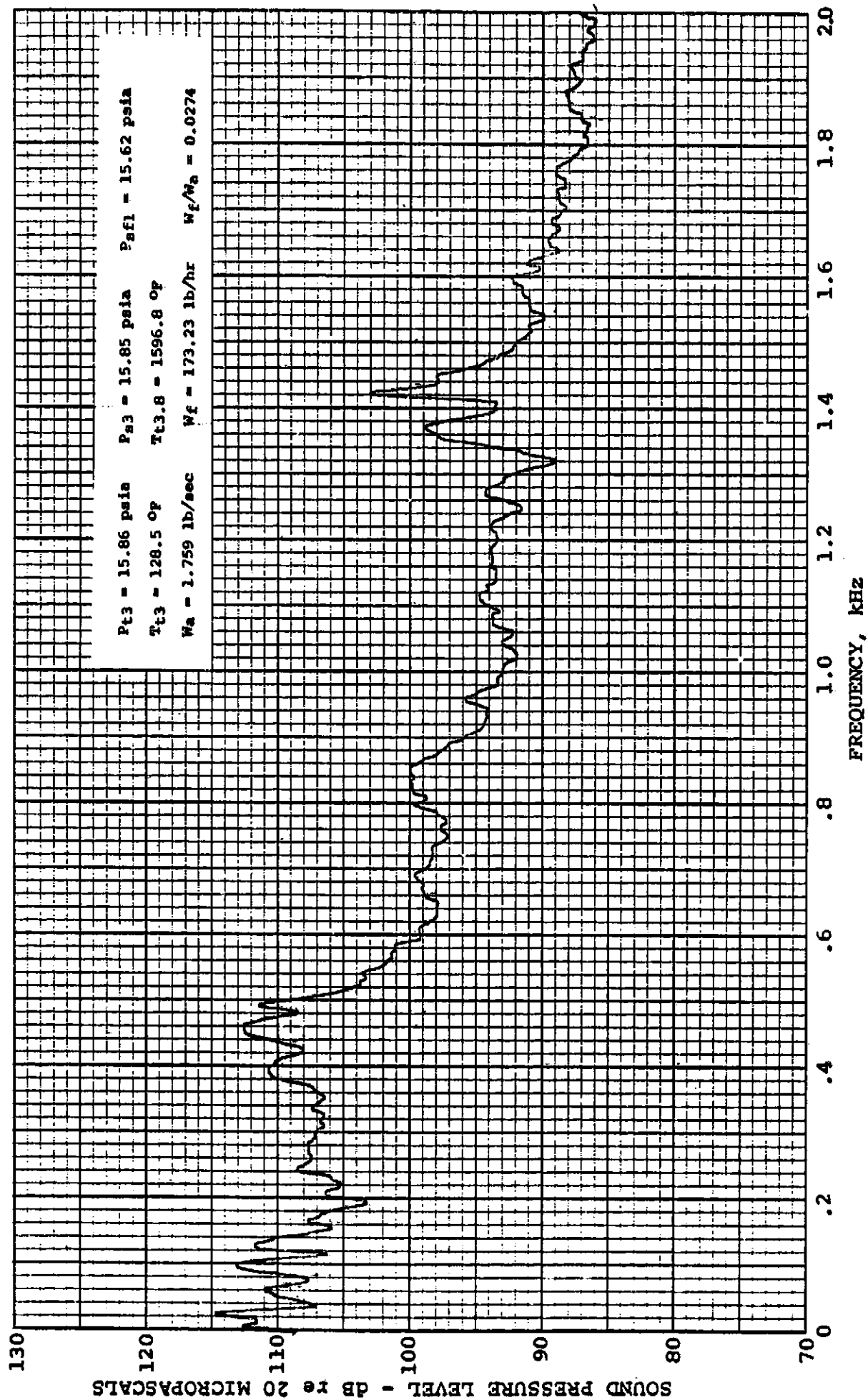
NARROW BAND SPECTRUM AT PROBE NUMBER 10 DURING RUN POINT NUMBER 135

APPENDIX C

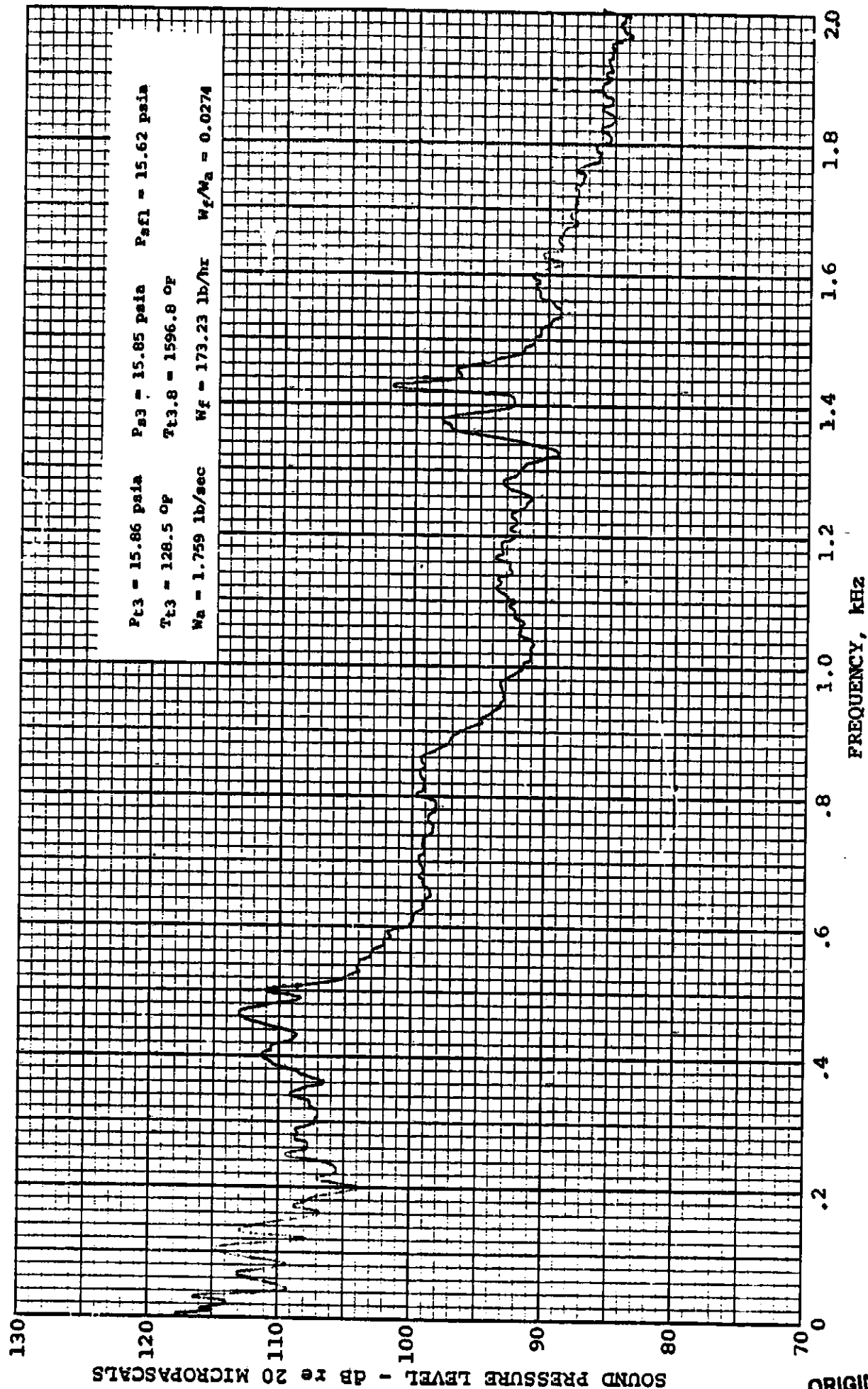
GROUP IV



NARROW BAND SPECTRUM AT PROBE NUMBER 2 DURING RUN POINT NUMBER 236

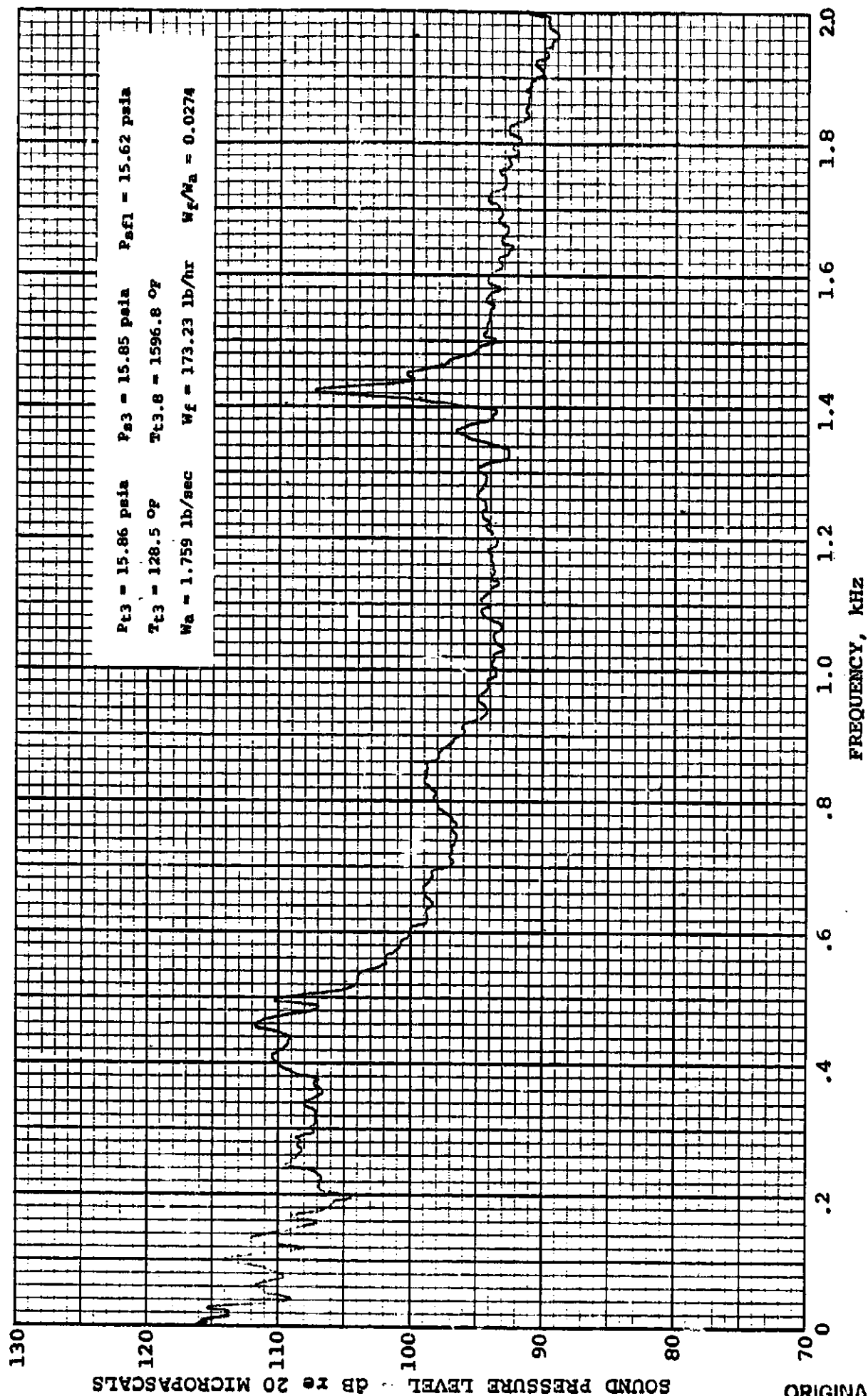


NARROW BAND SPECTRUM AT PROBE NUMBER 3 DURING RUN POINT NUMBER 236

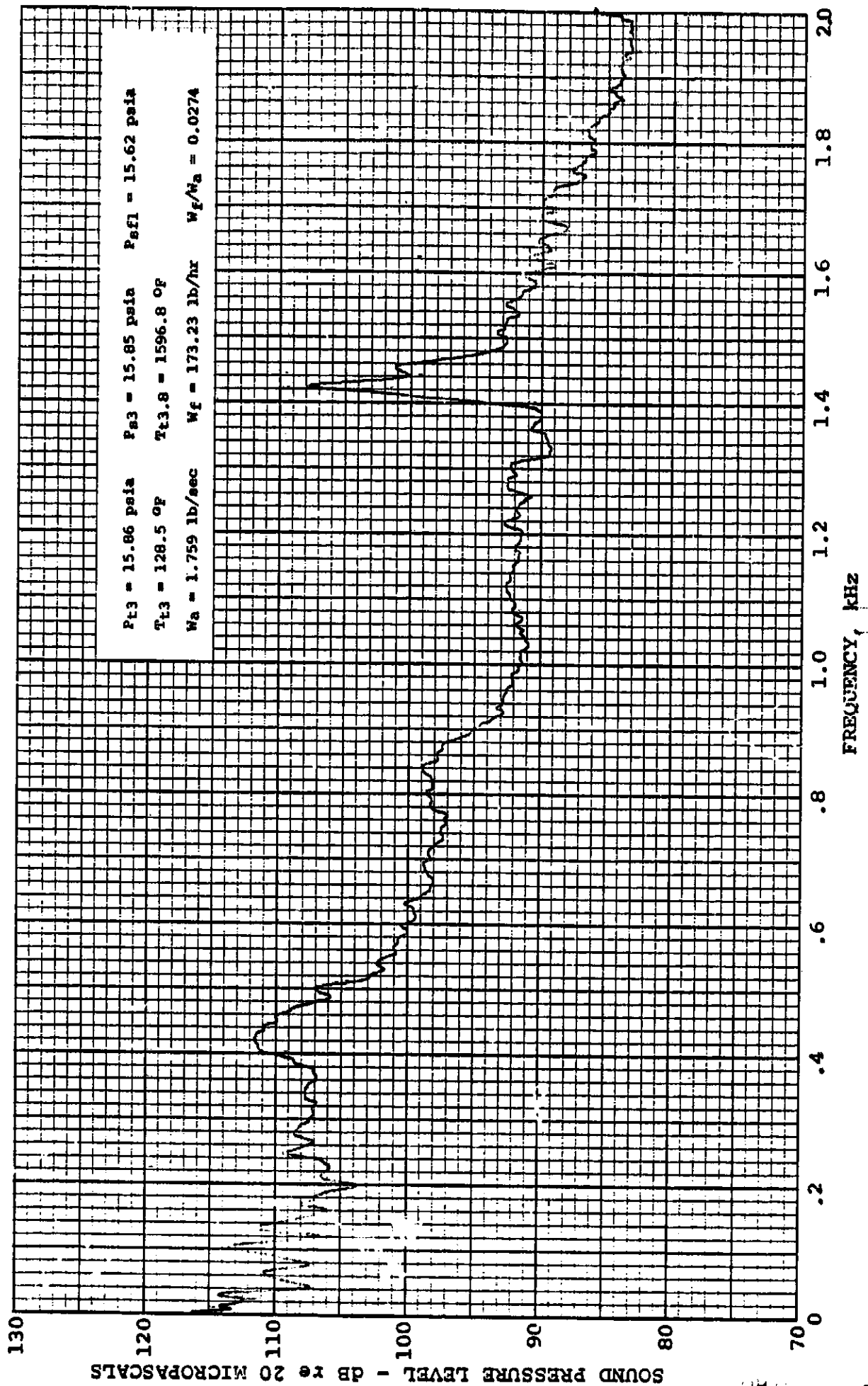


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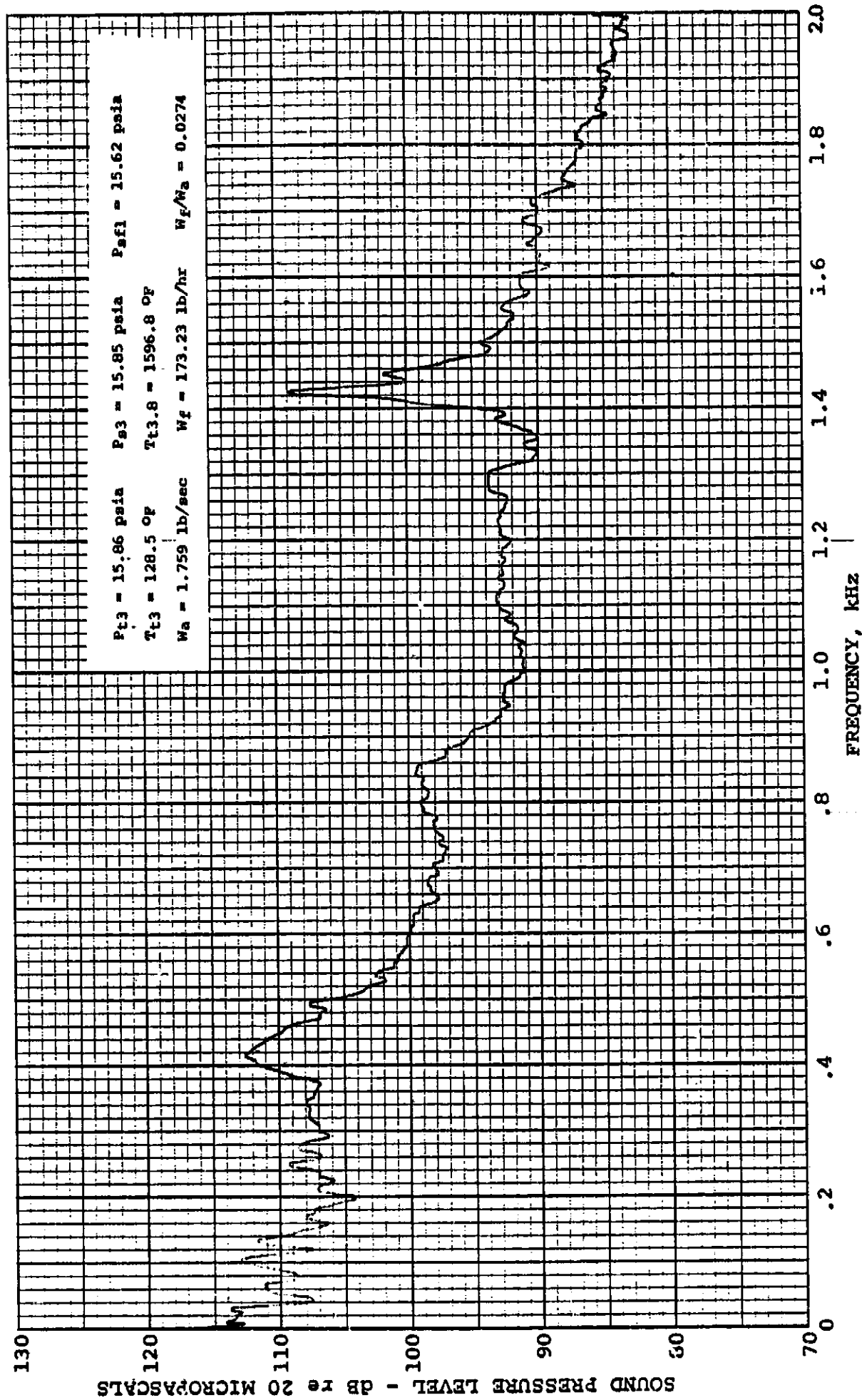
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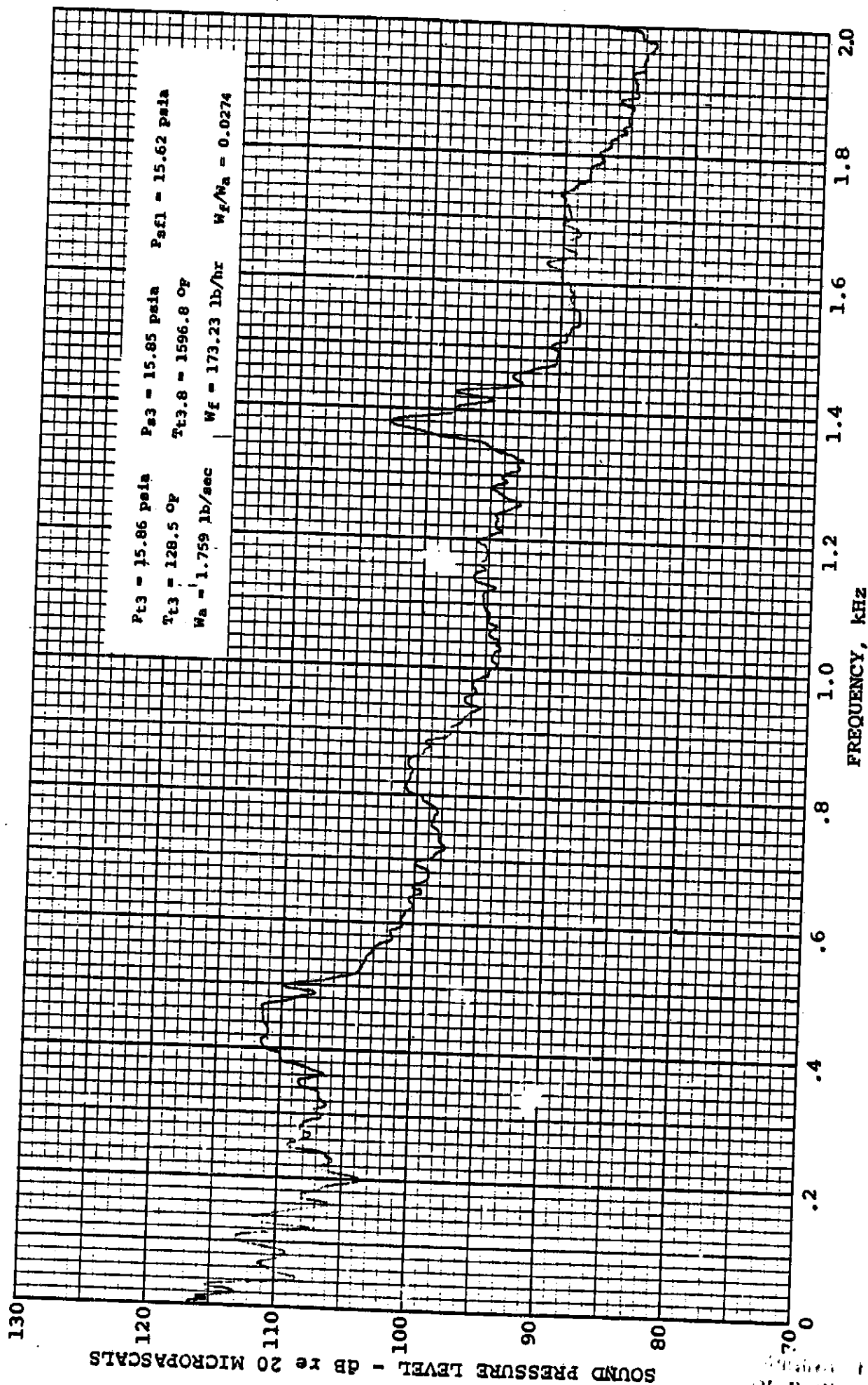
NARROW BAND SPECTRUM AT PROBE NUMBER 5 DURING RUN POINT NUMBER 236



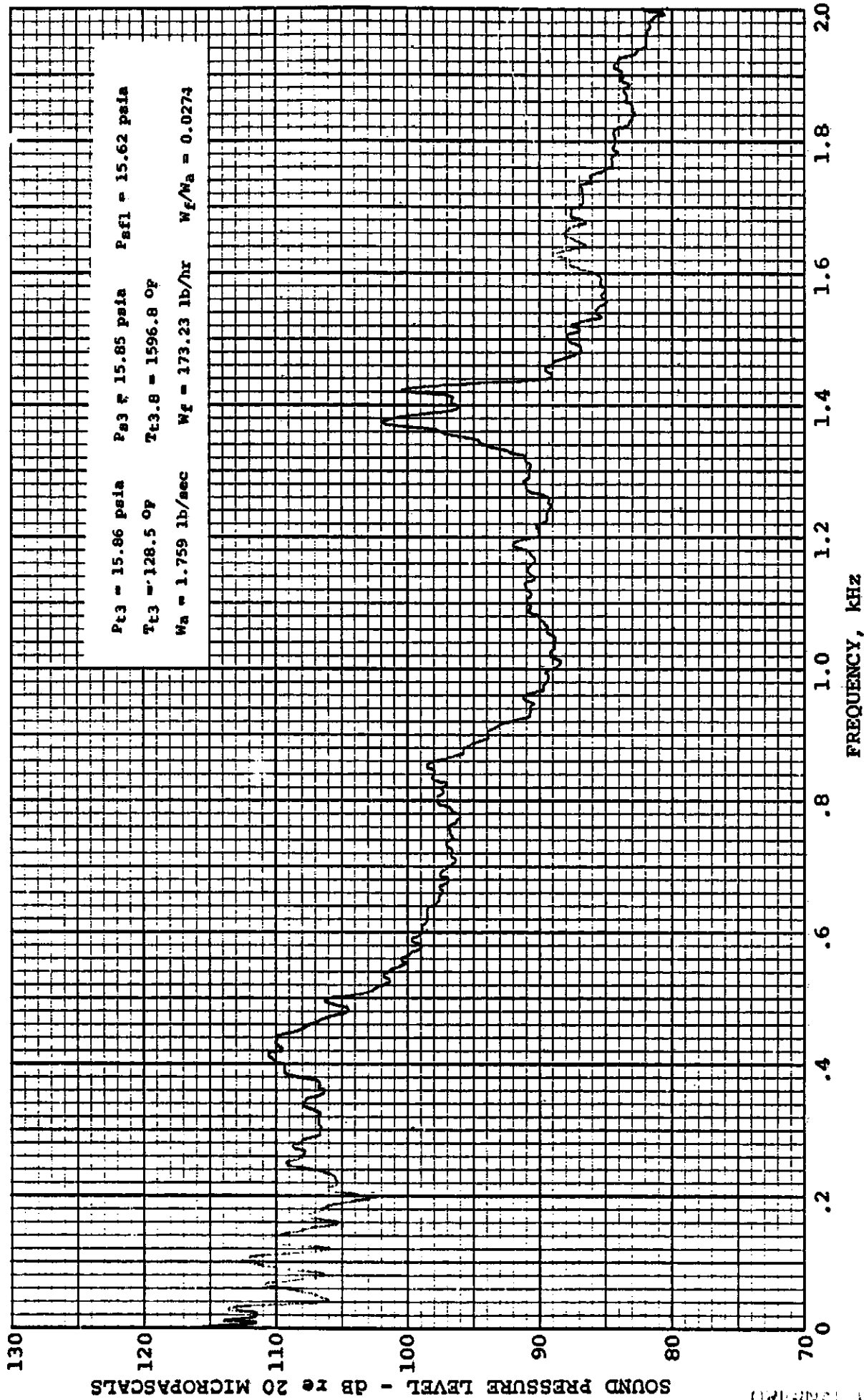
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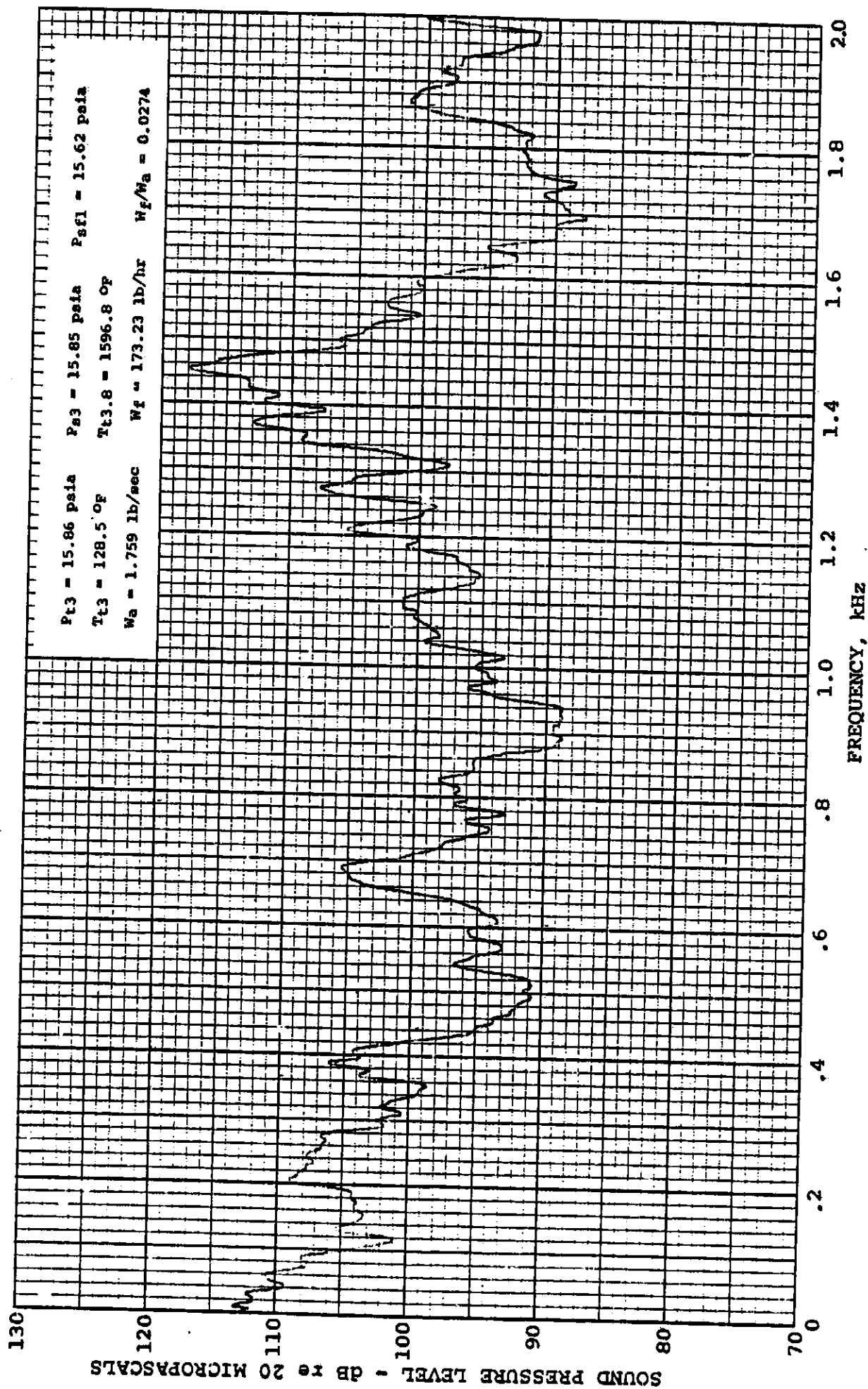
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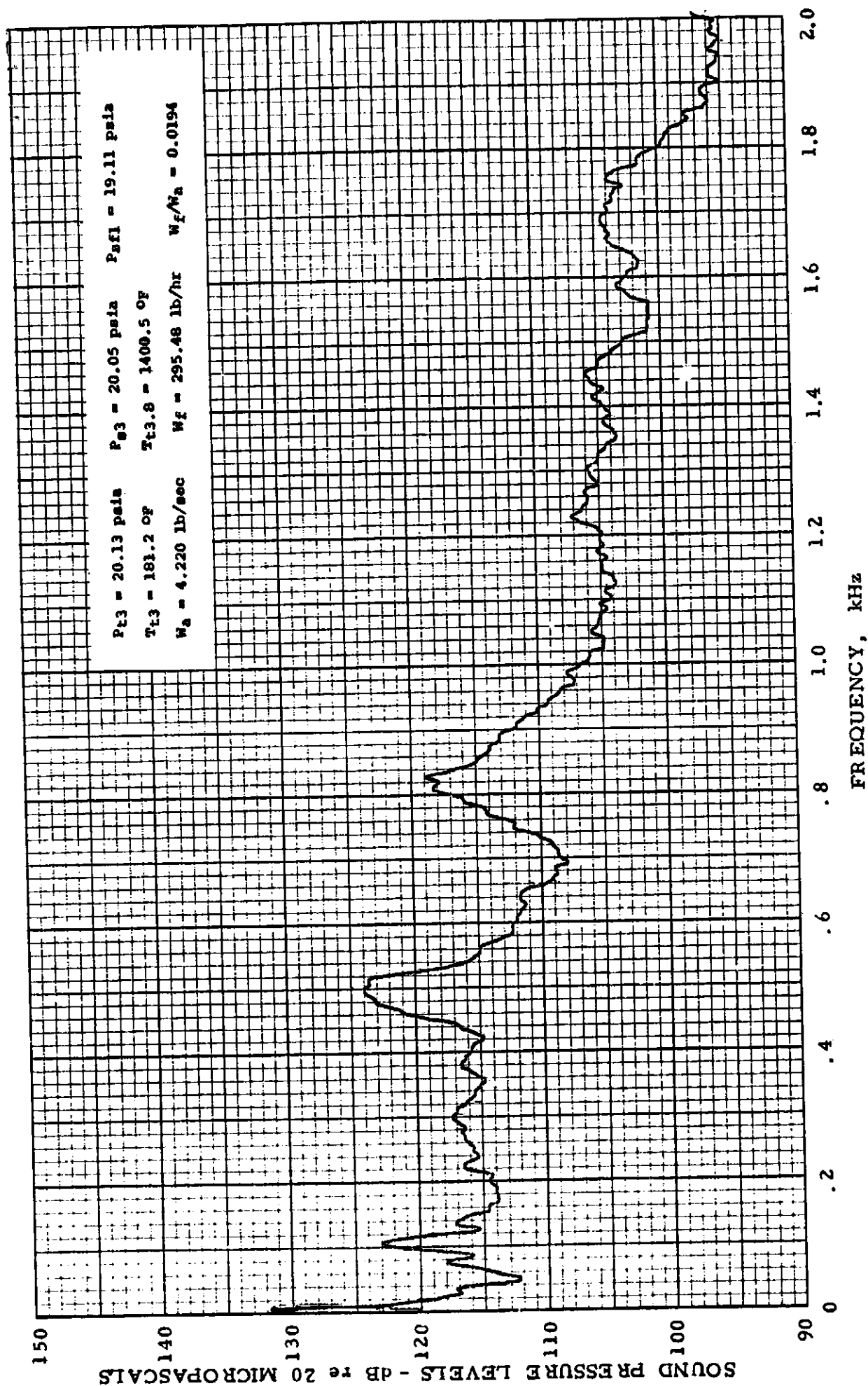
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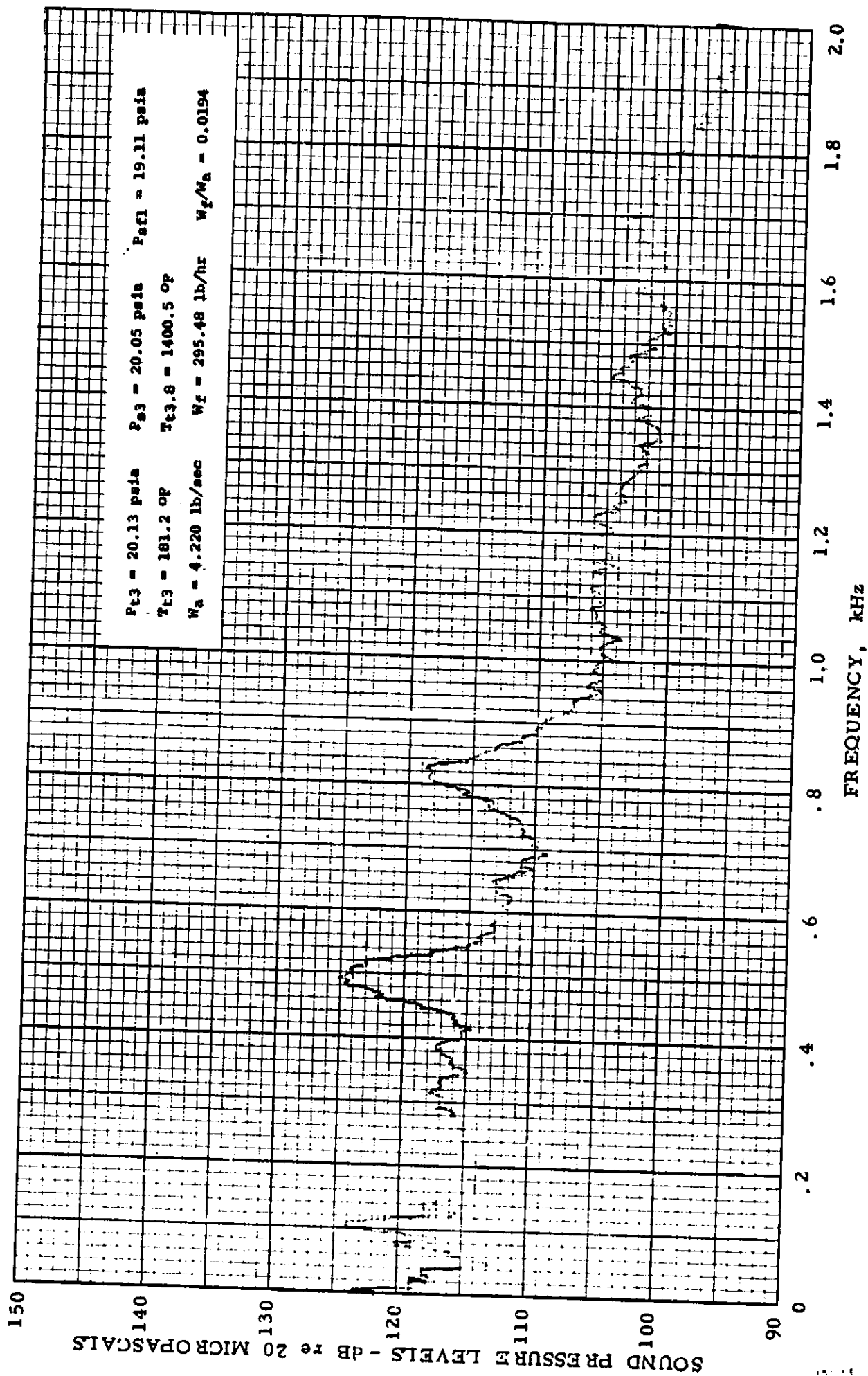
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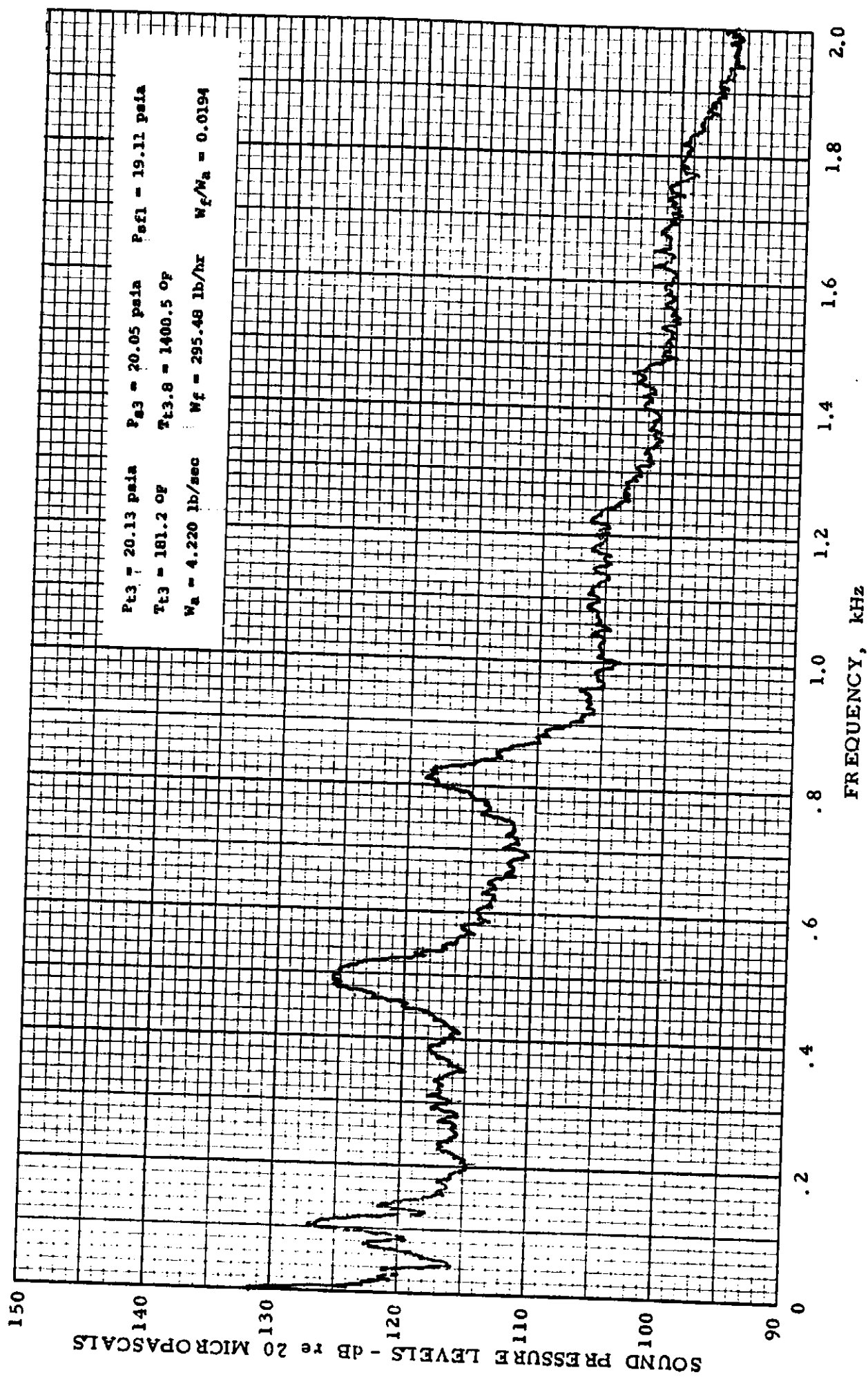
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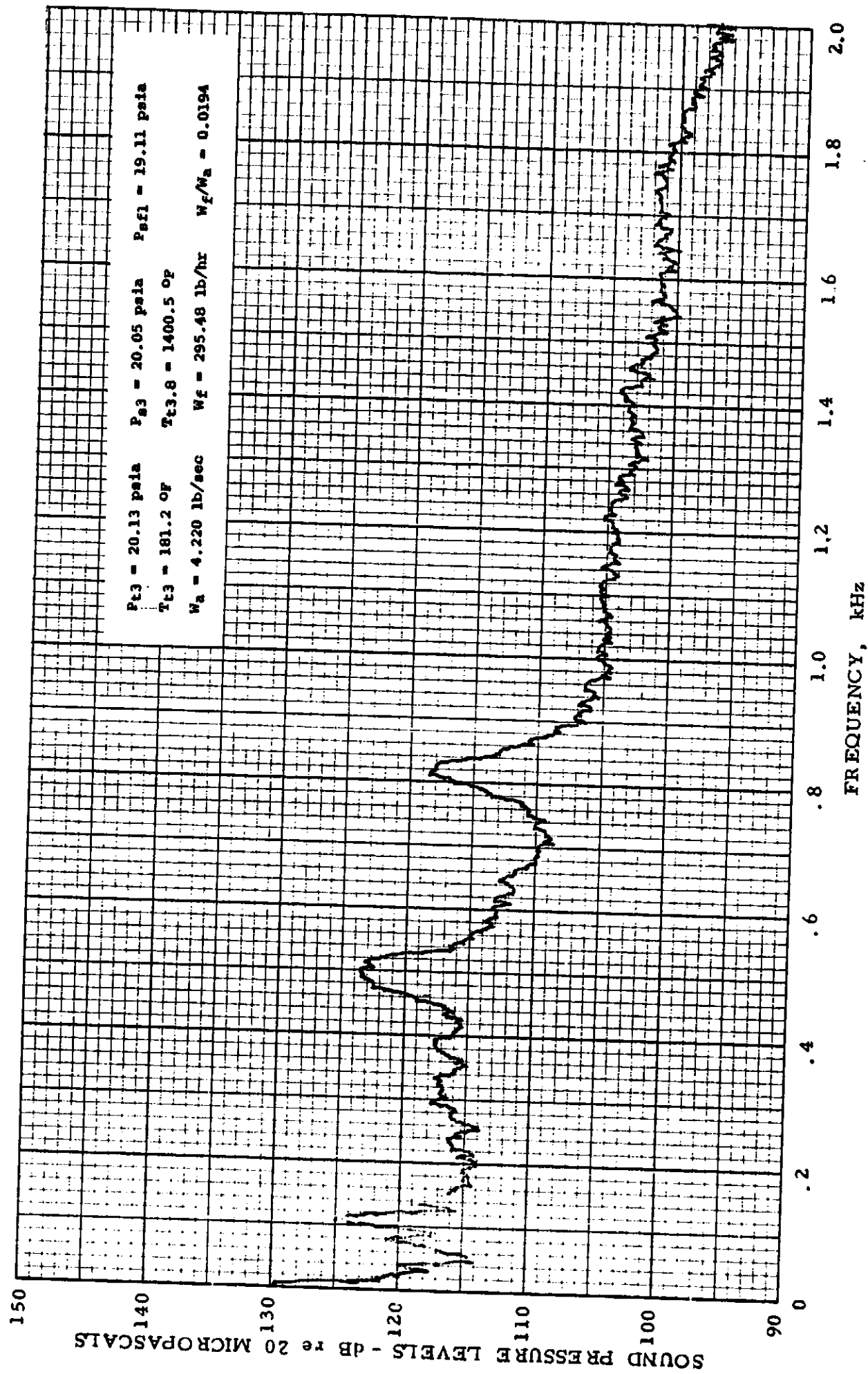
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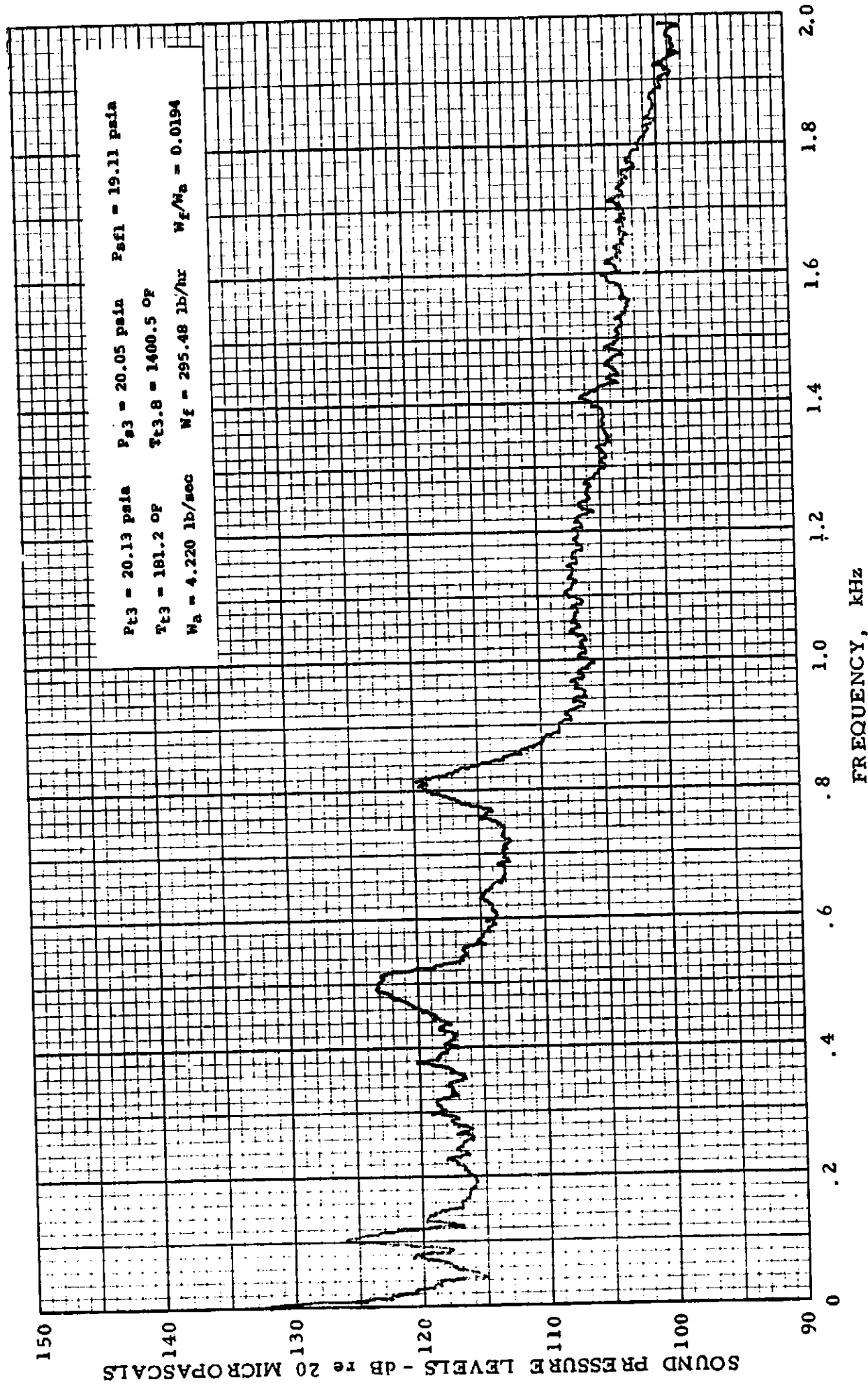
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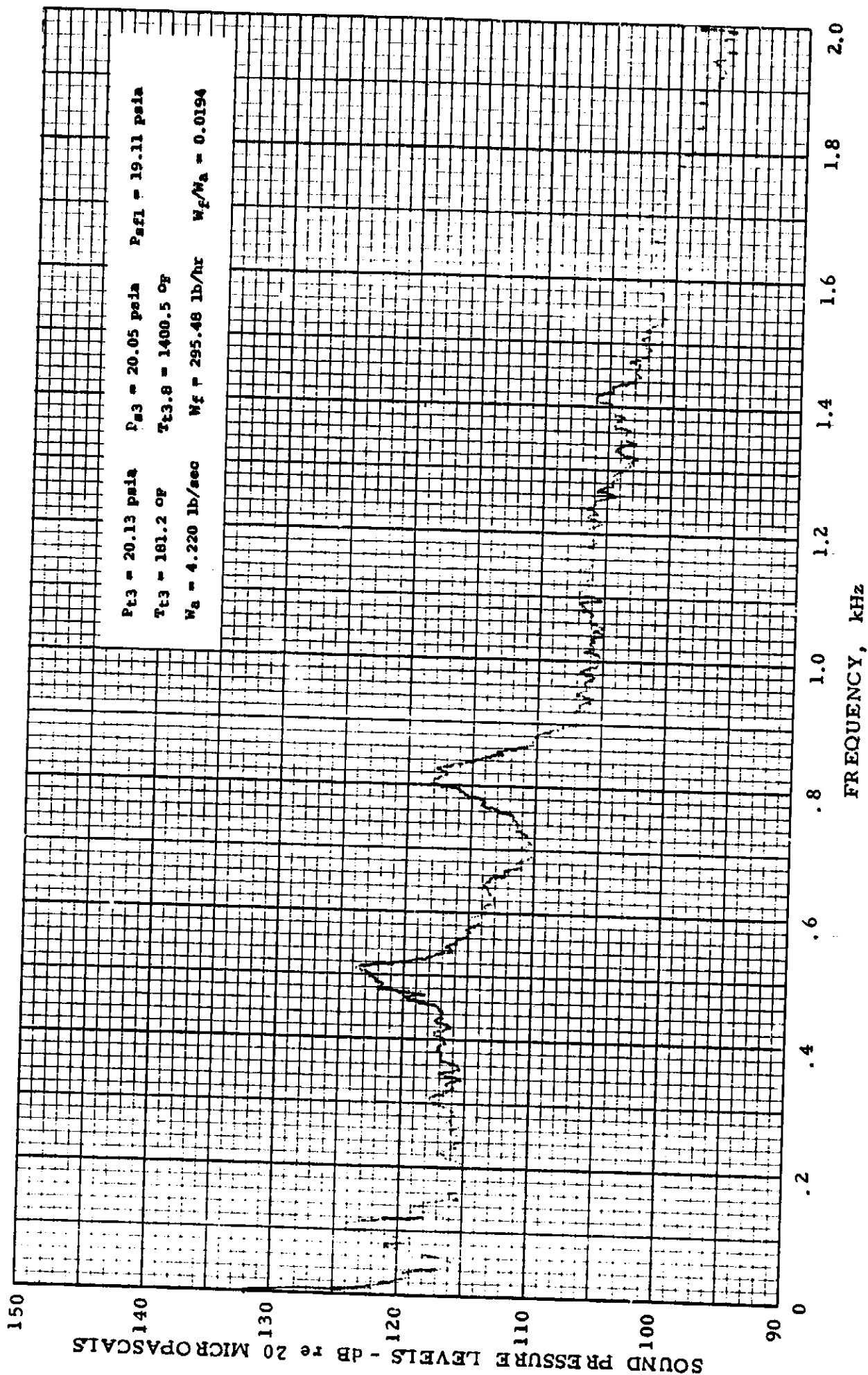
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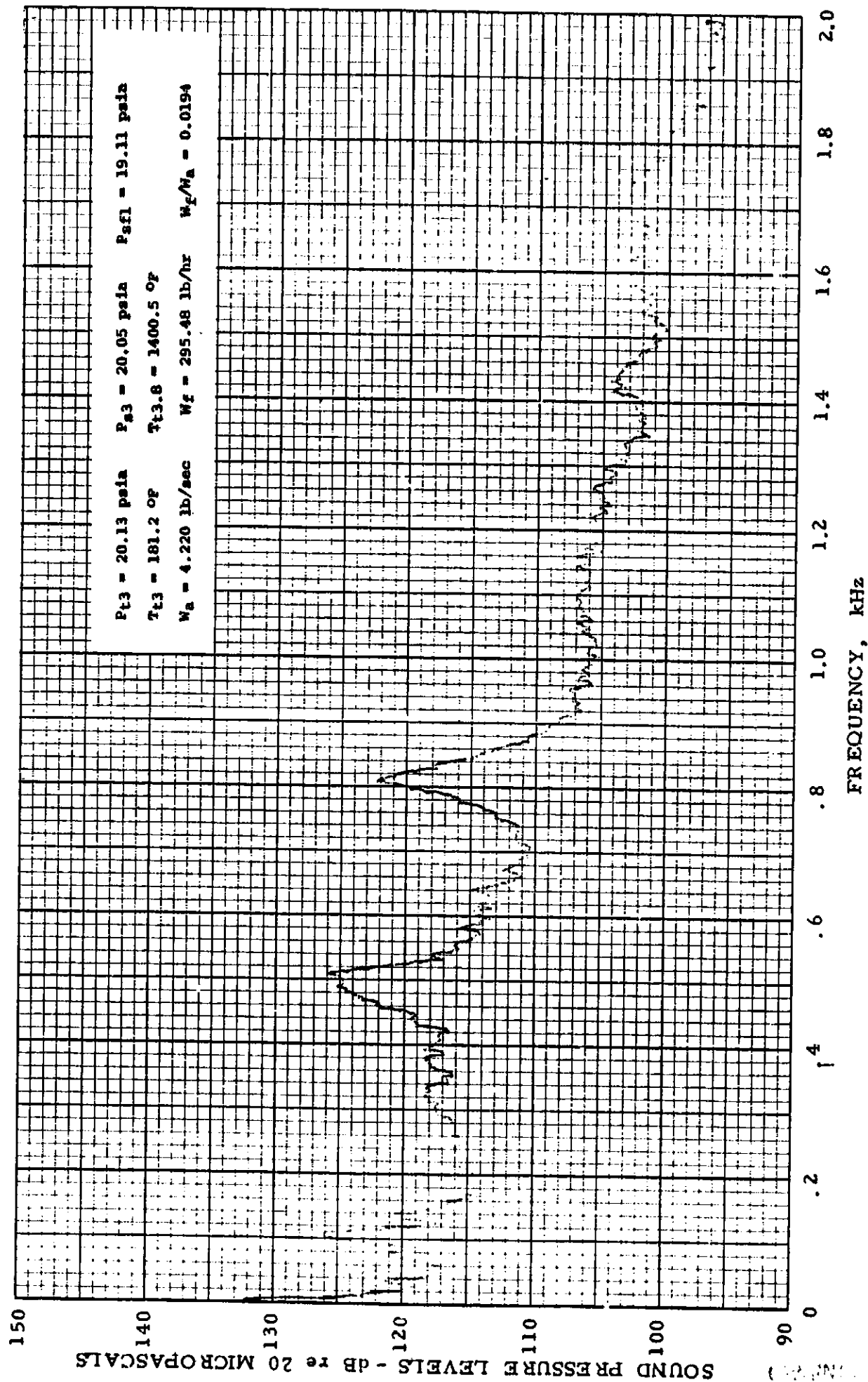
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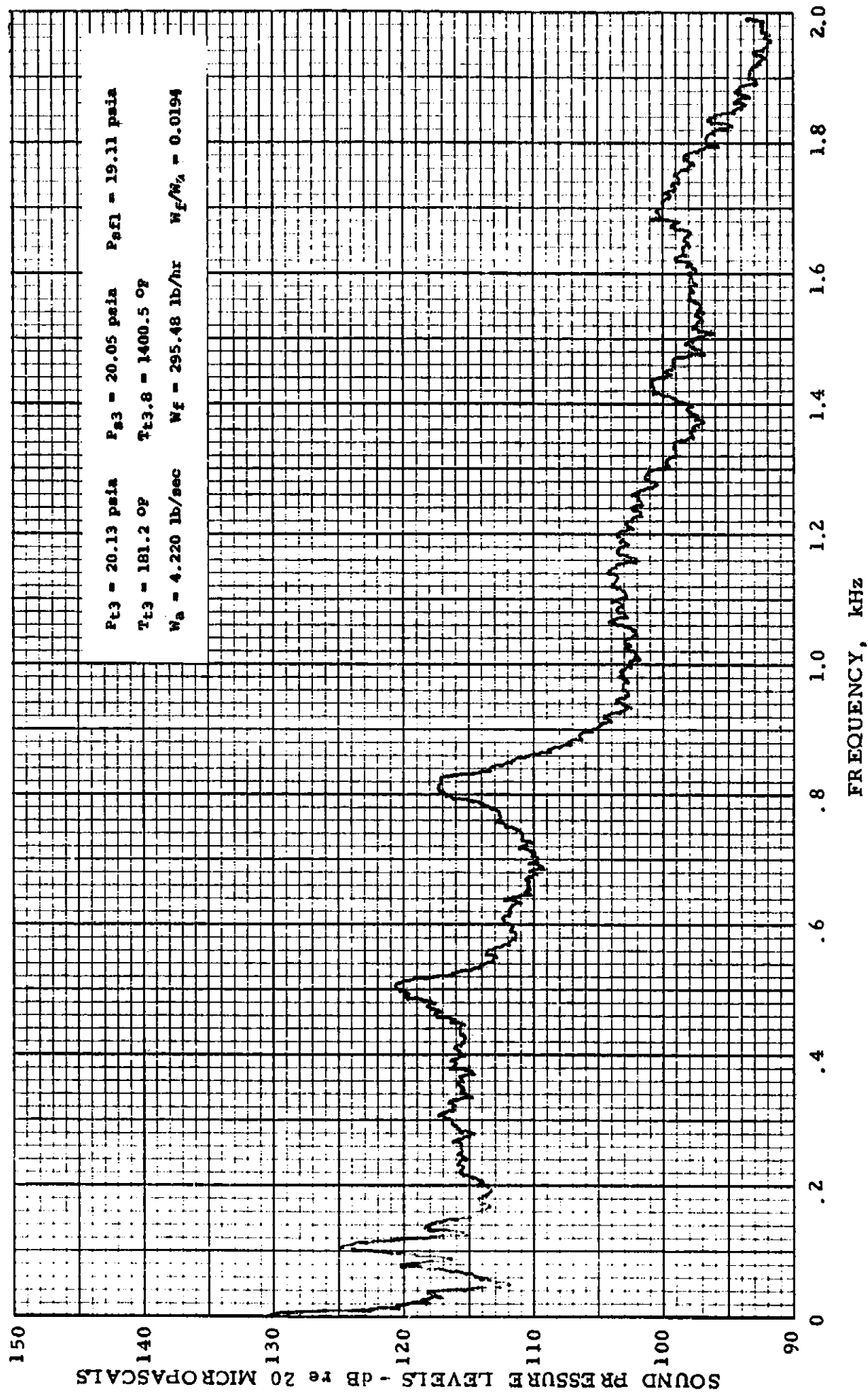
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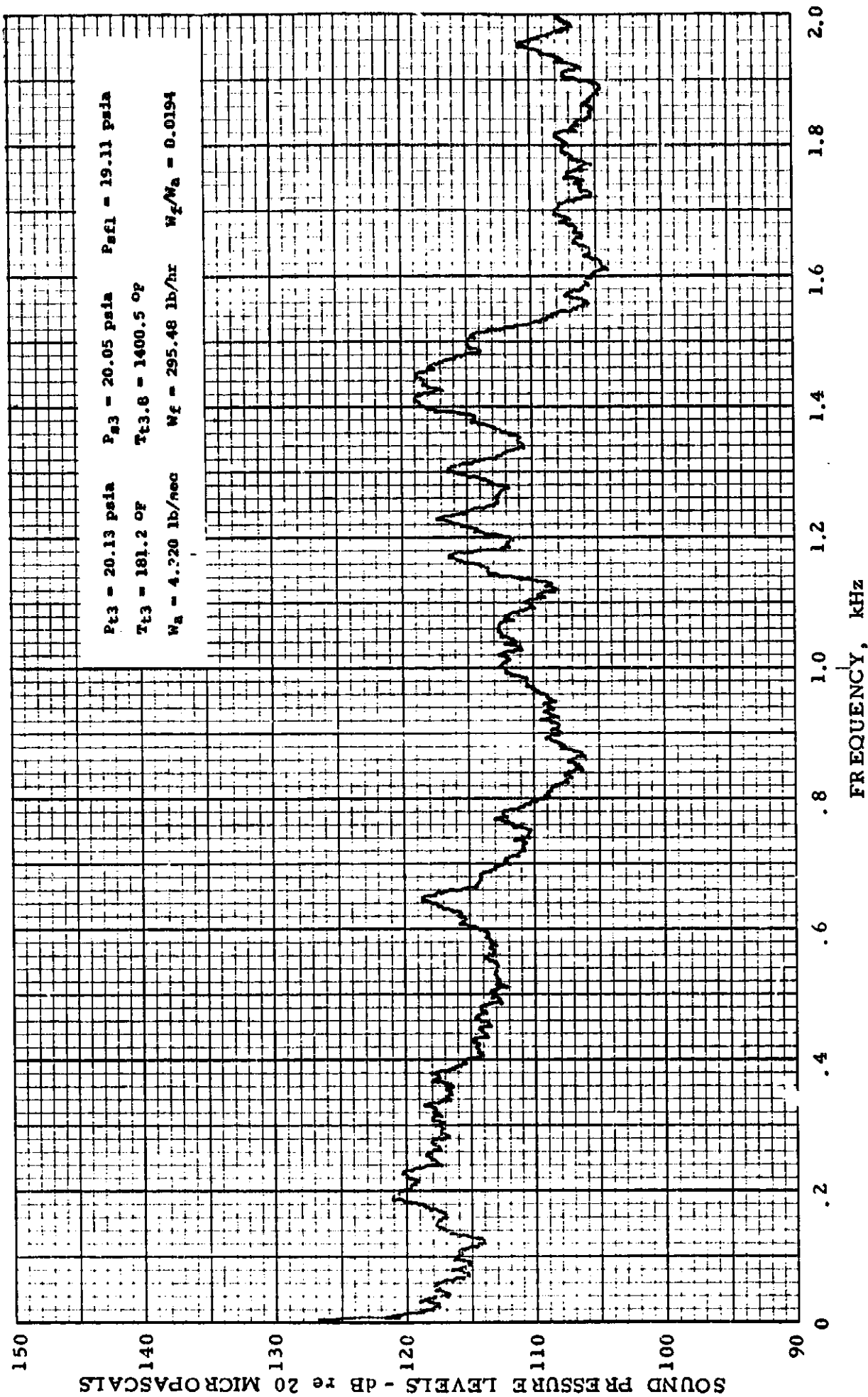
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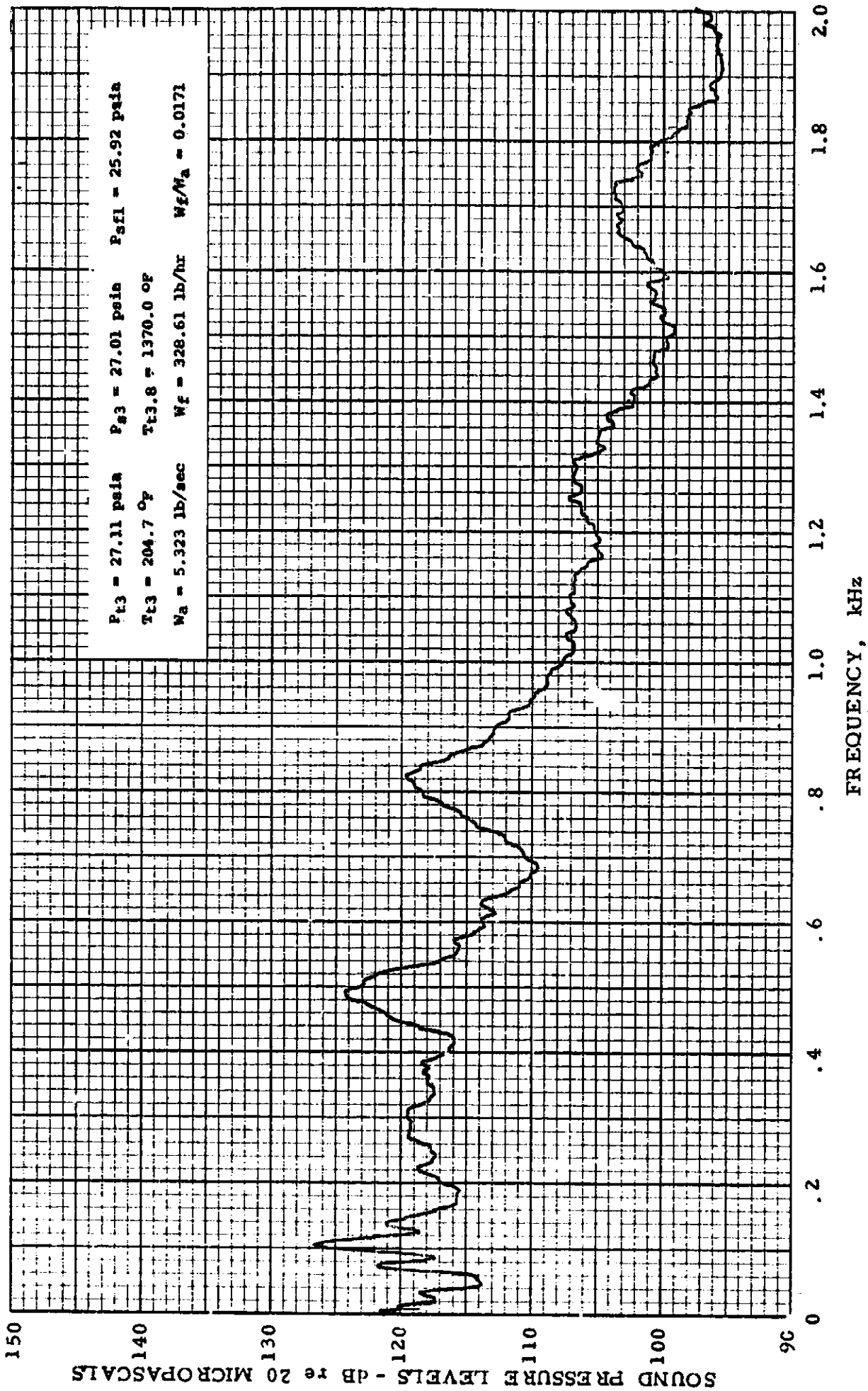
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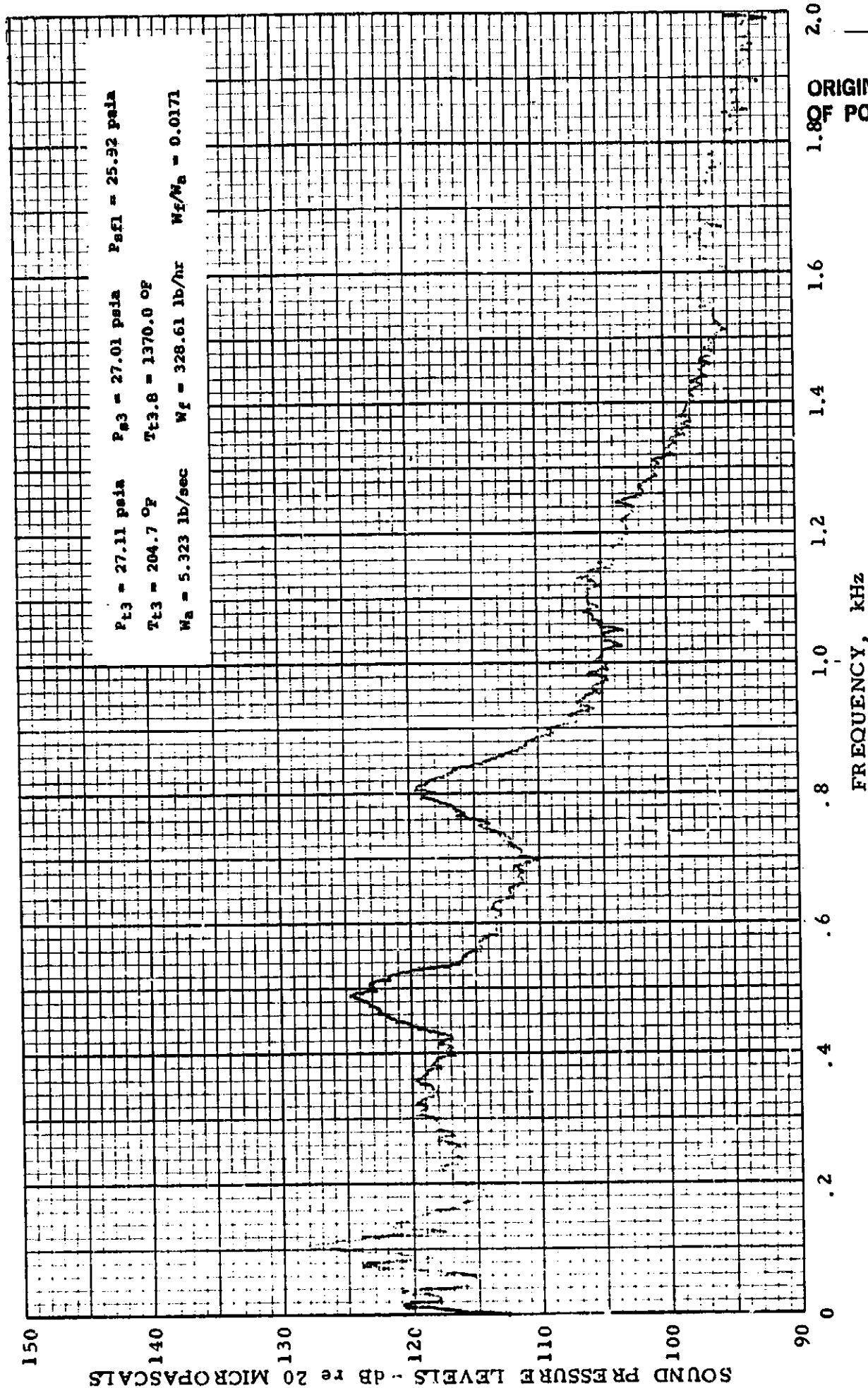
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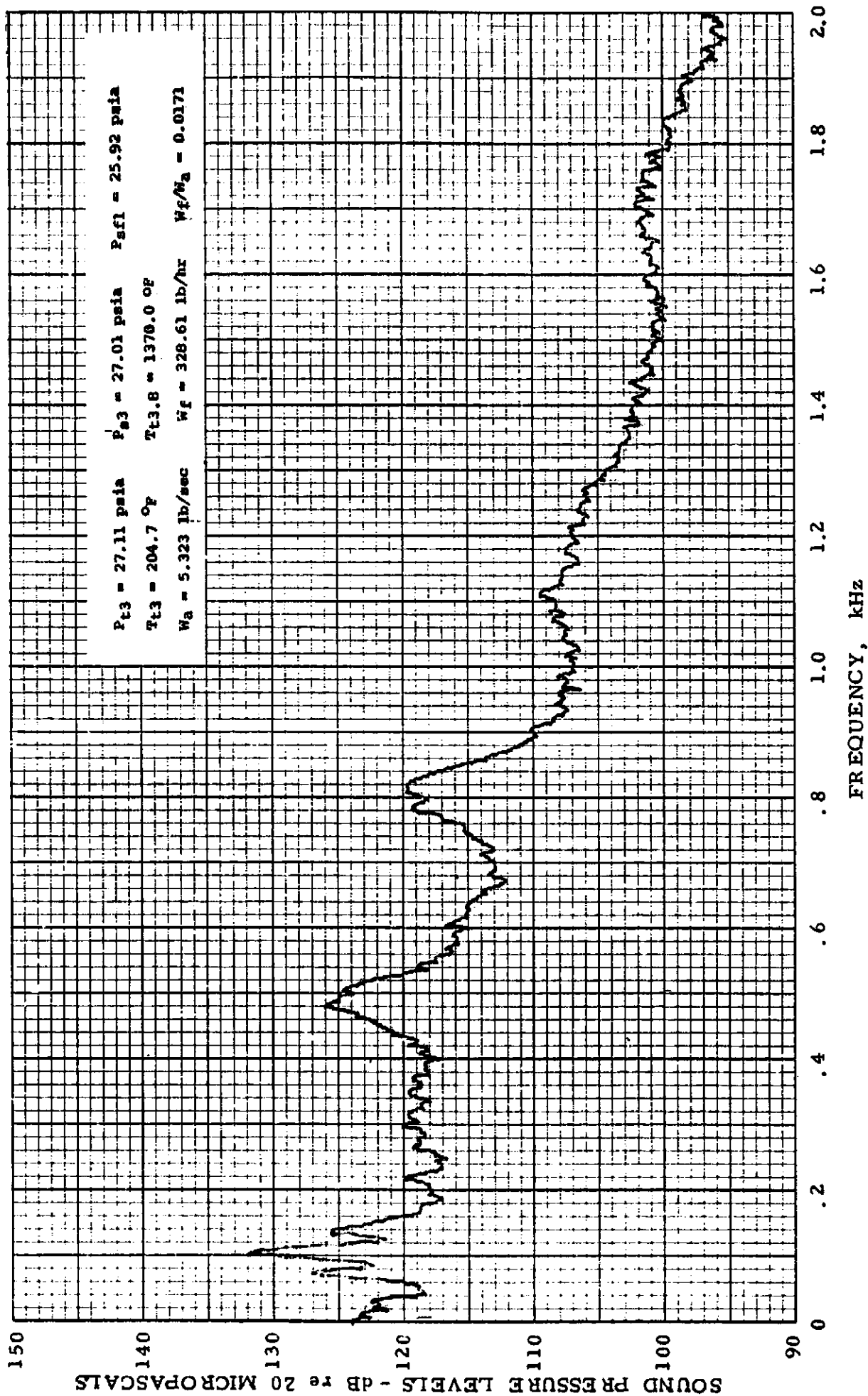


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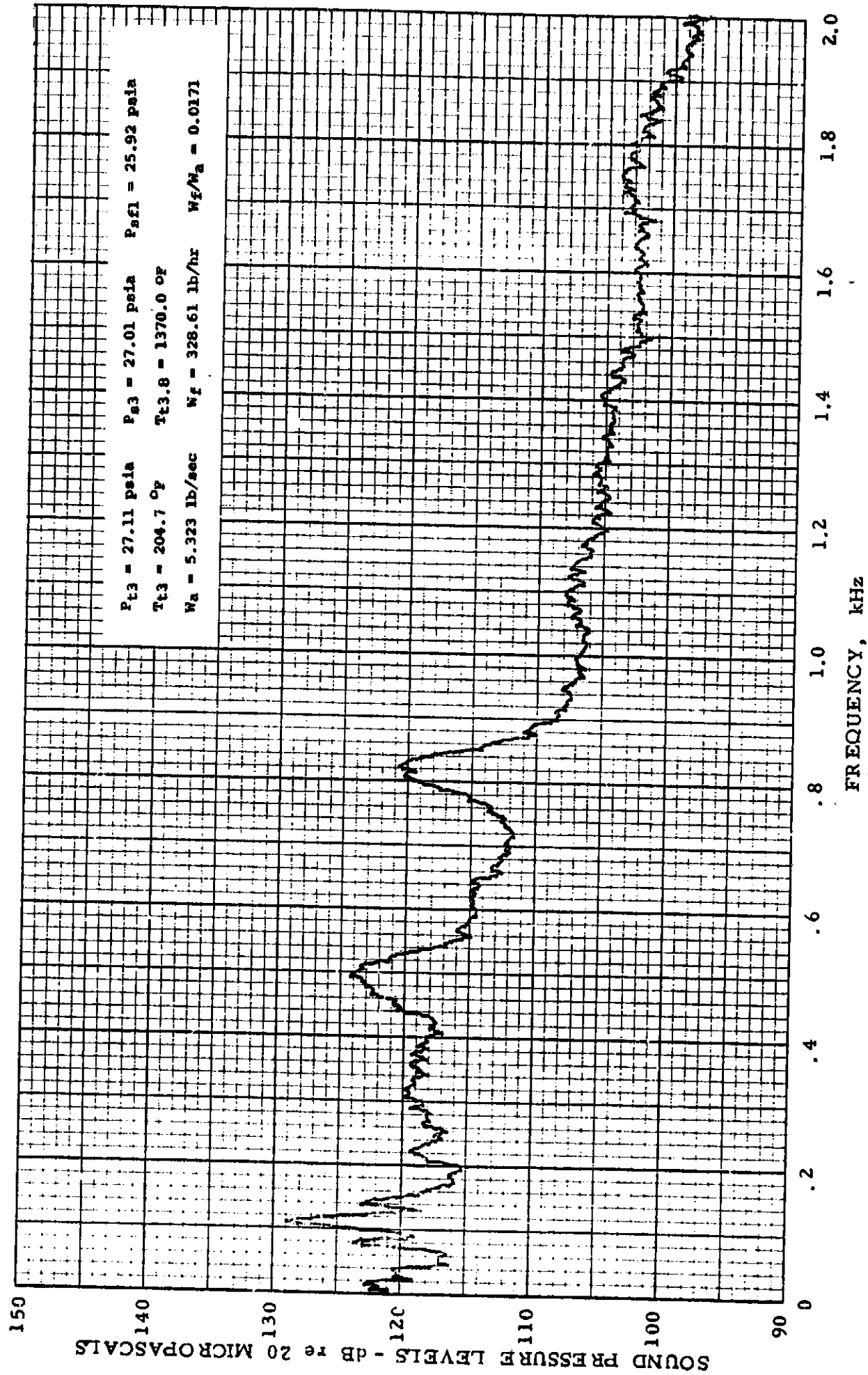


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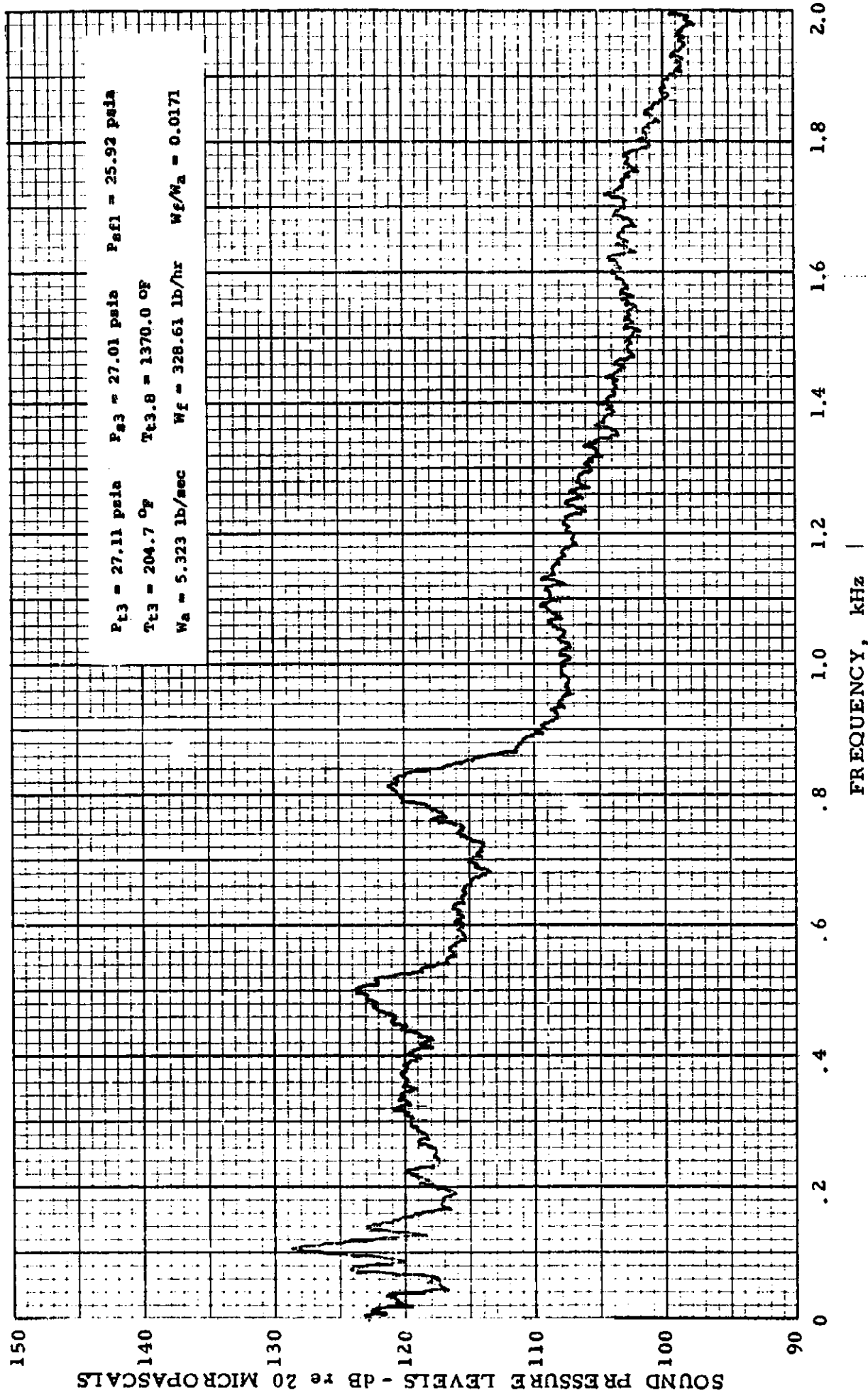
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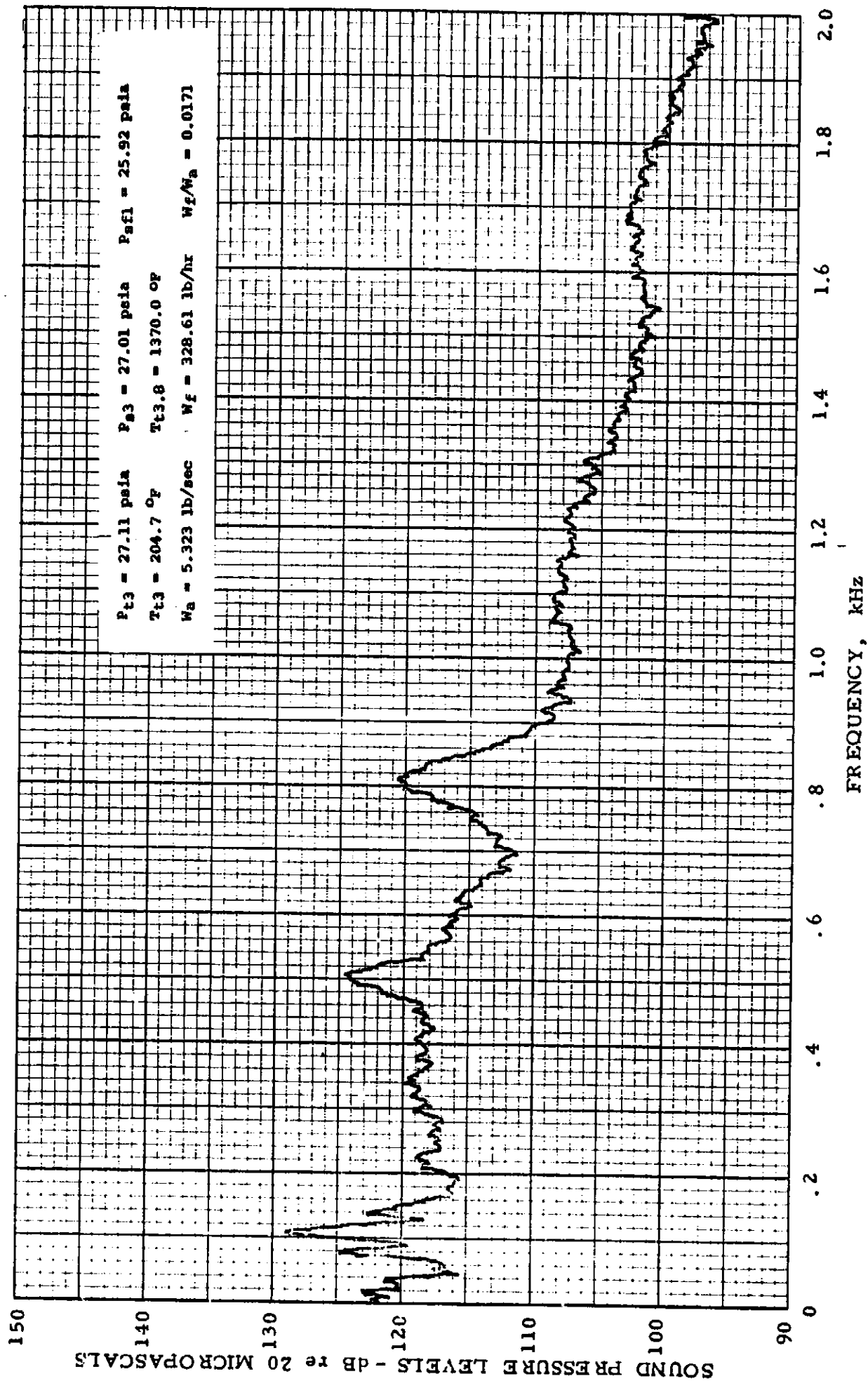
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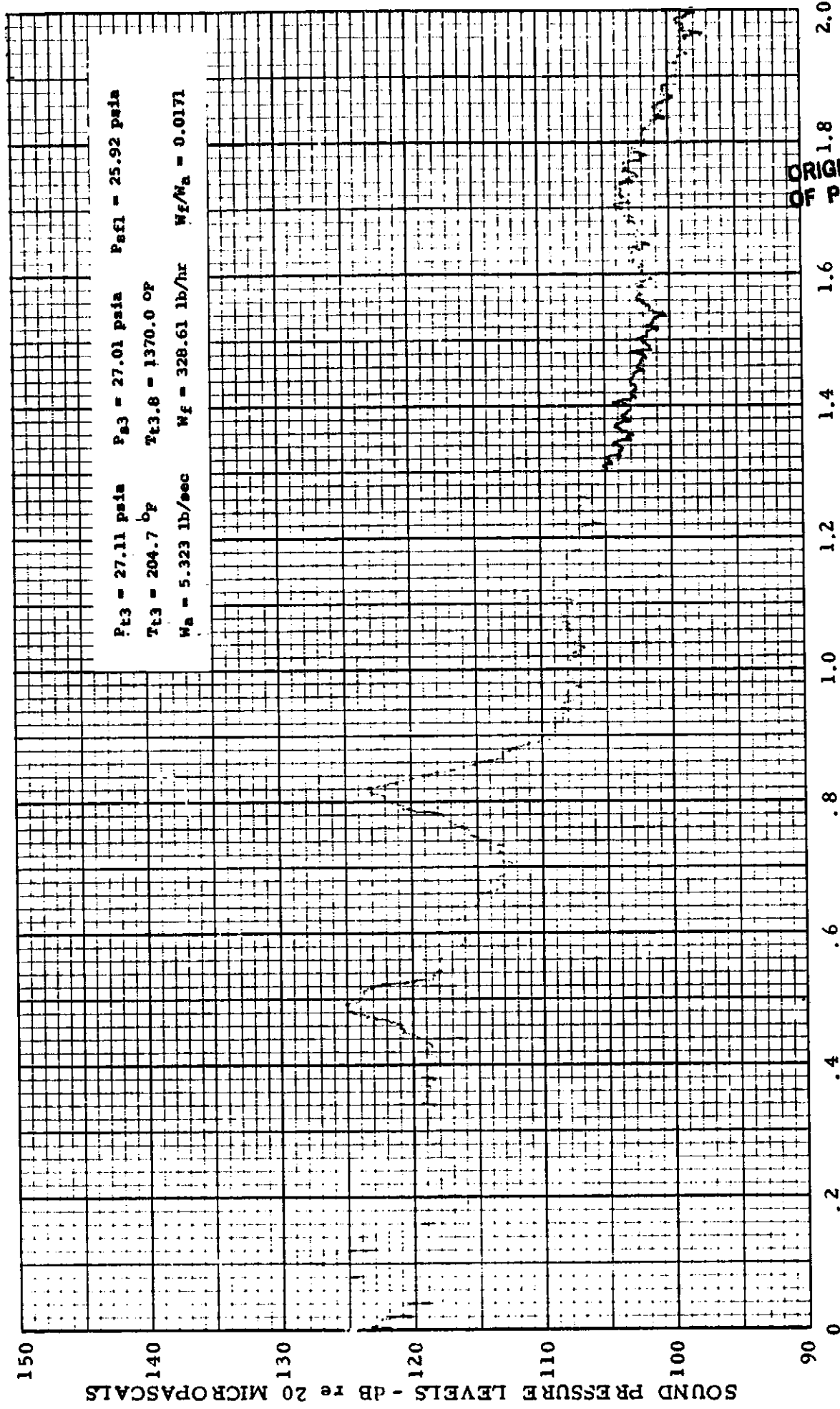
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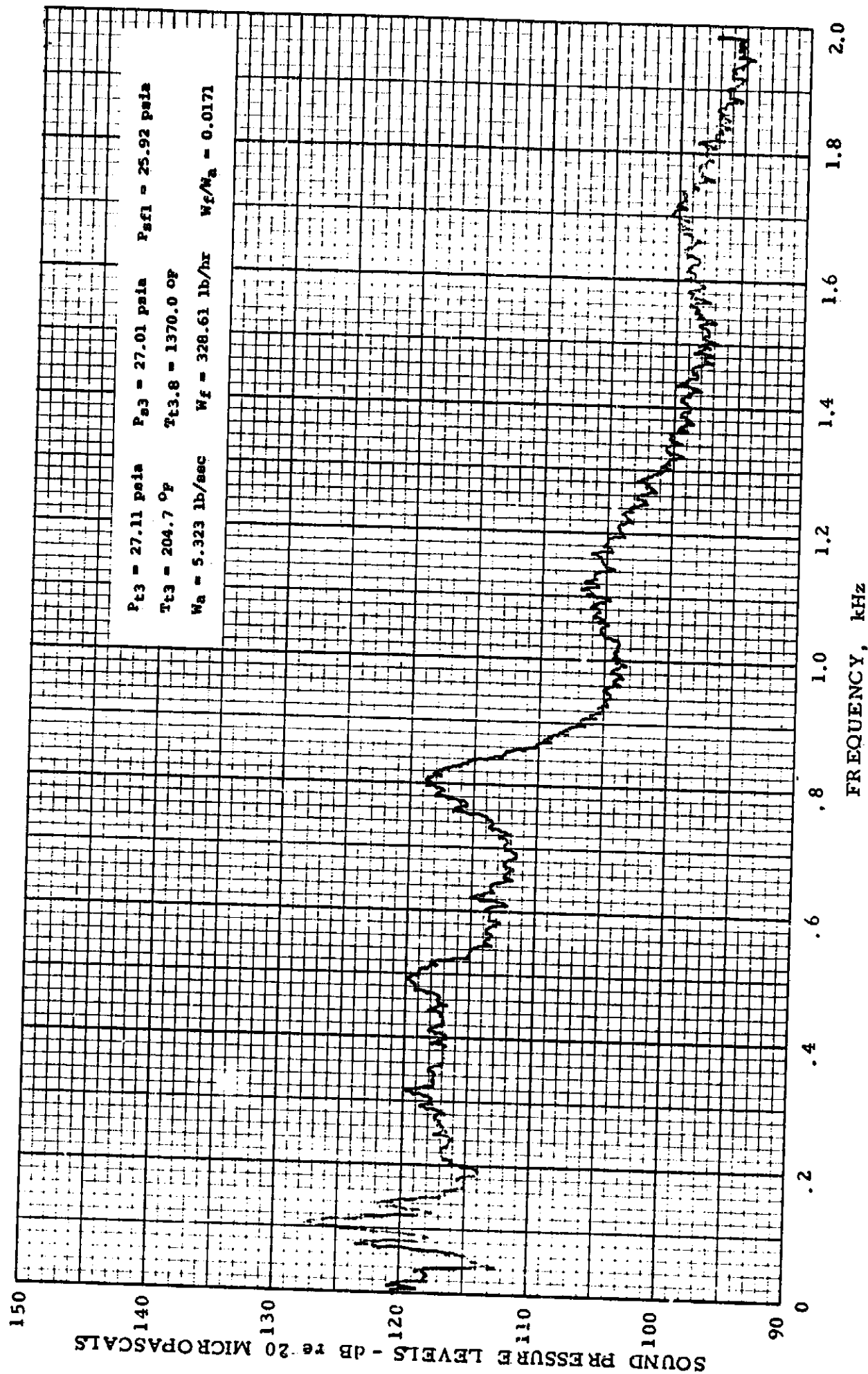
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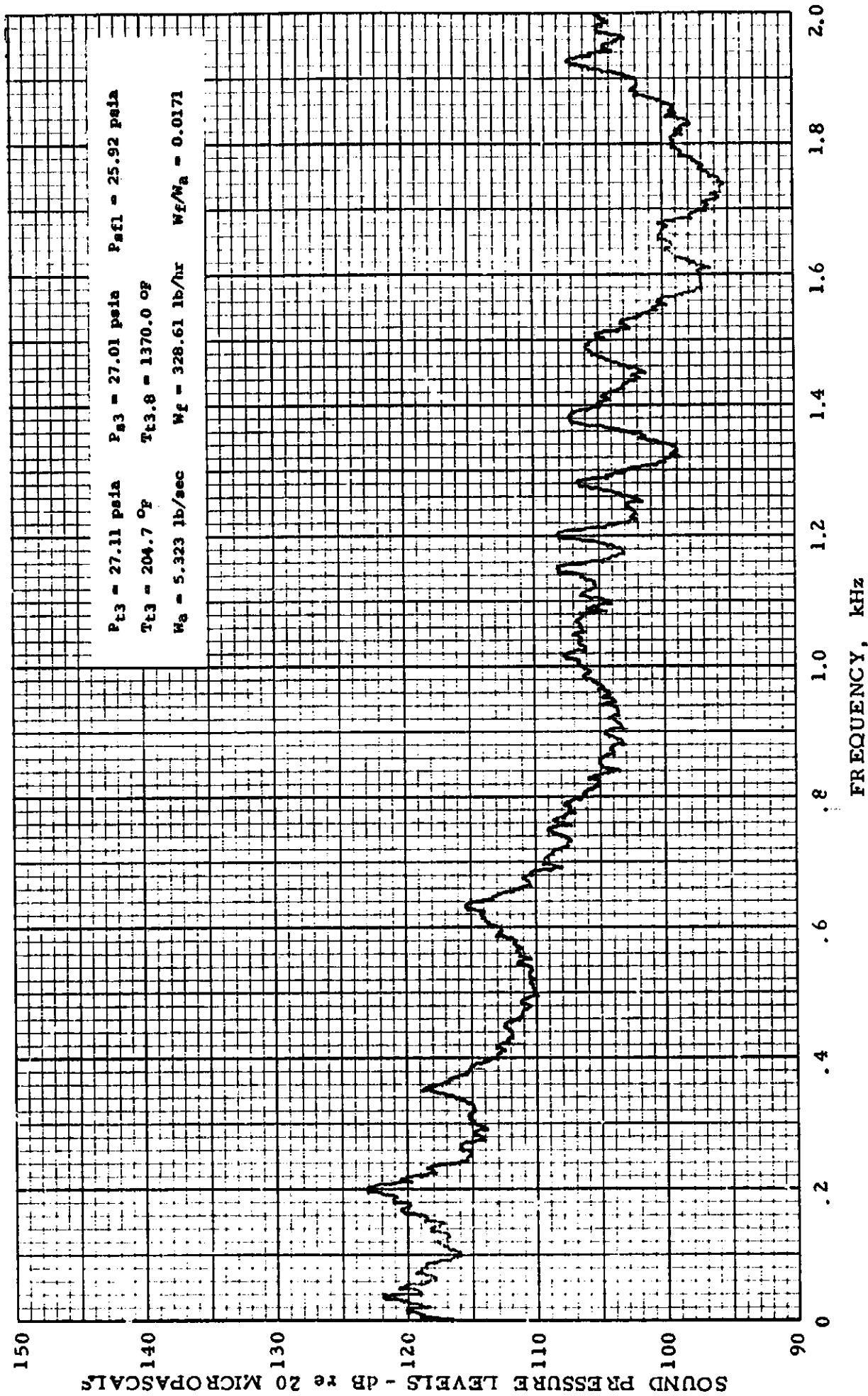
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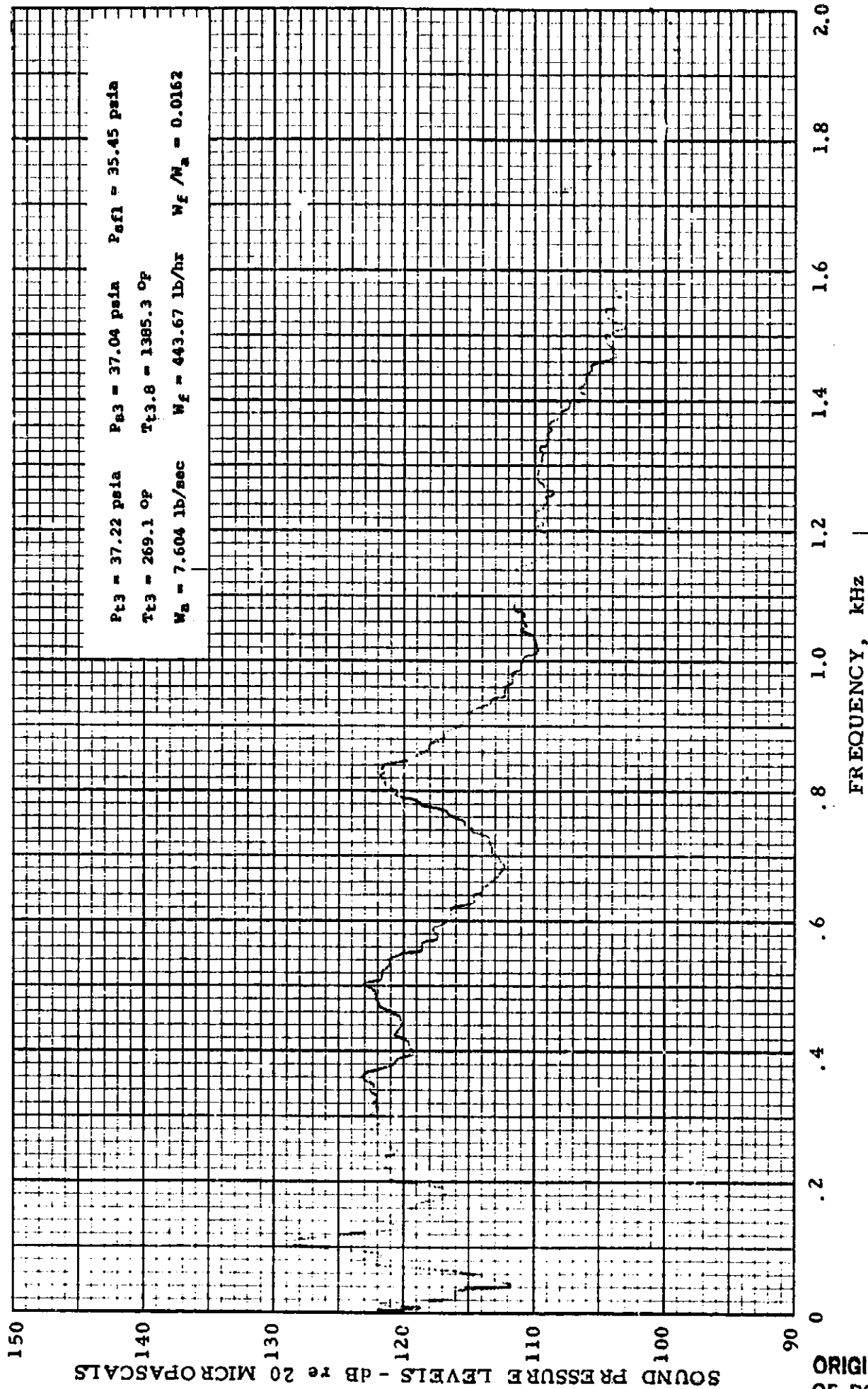
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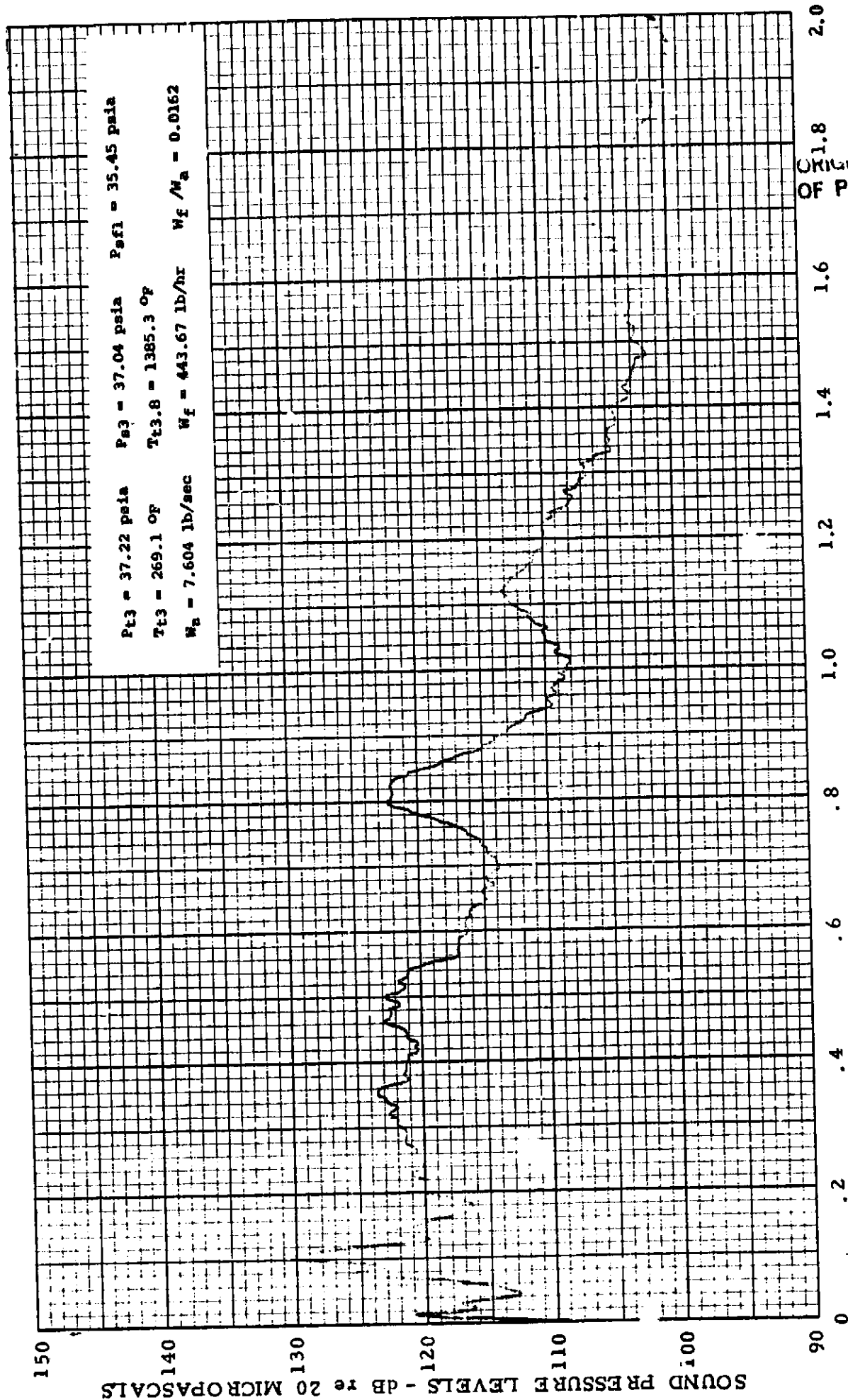


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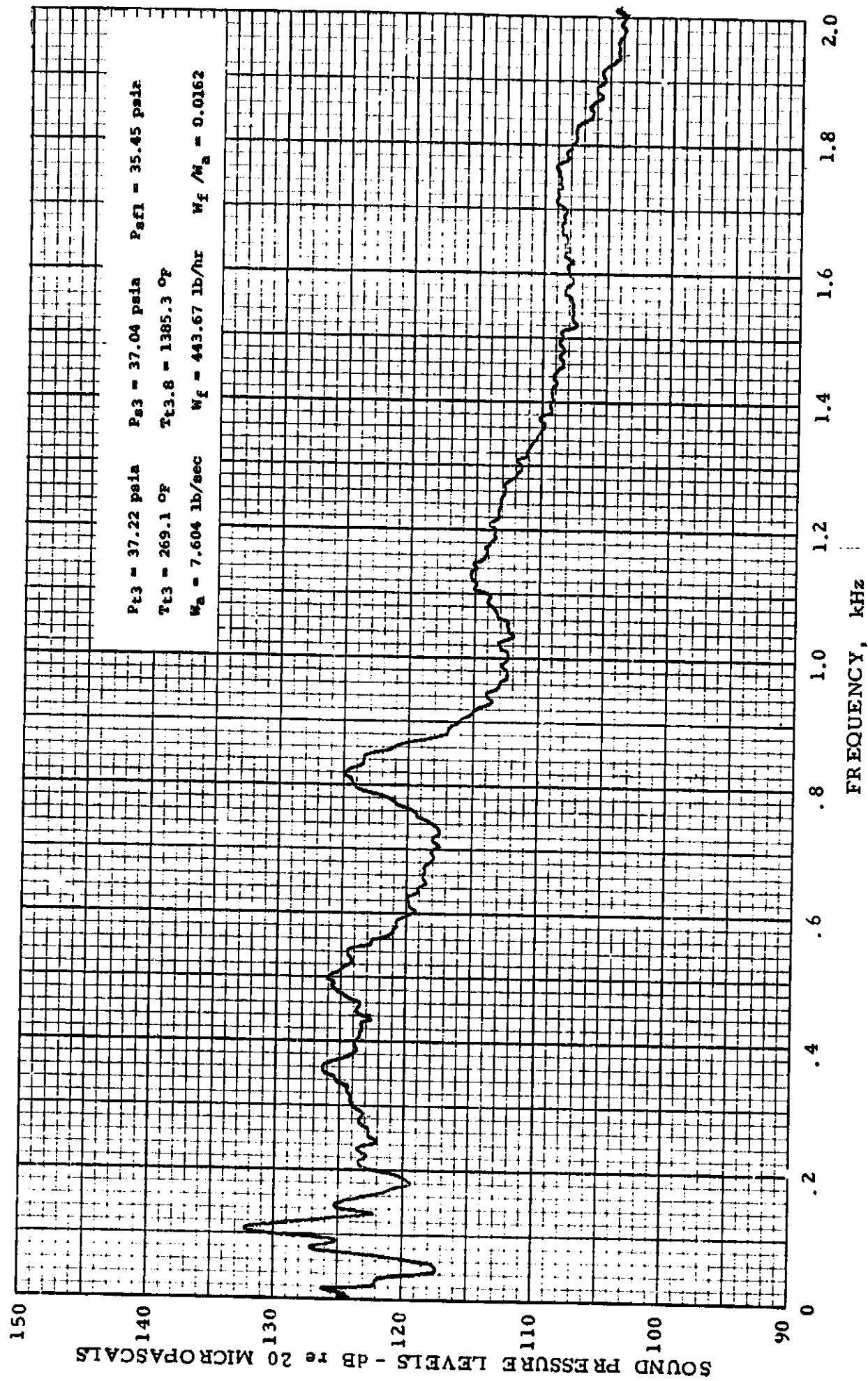




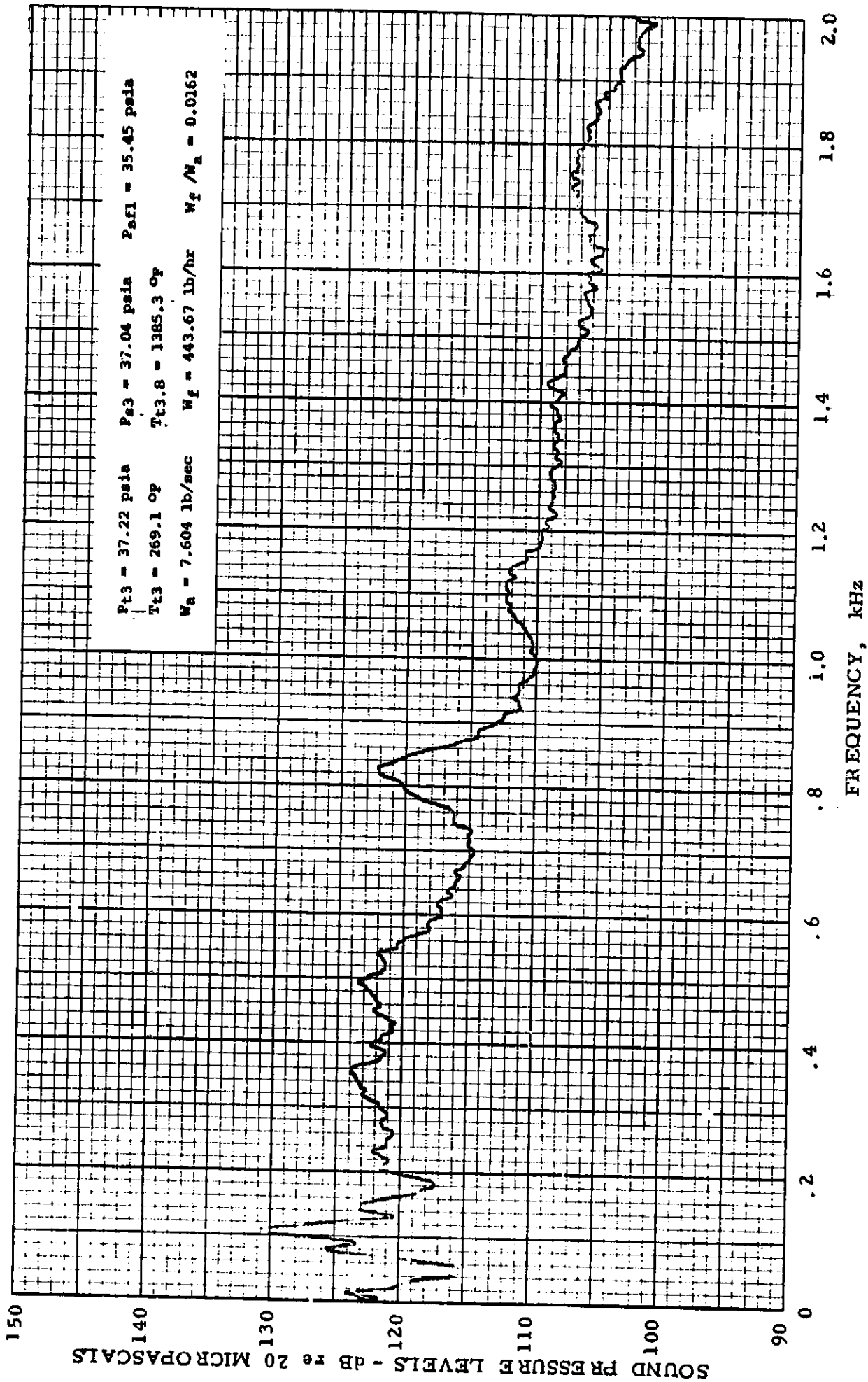
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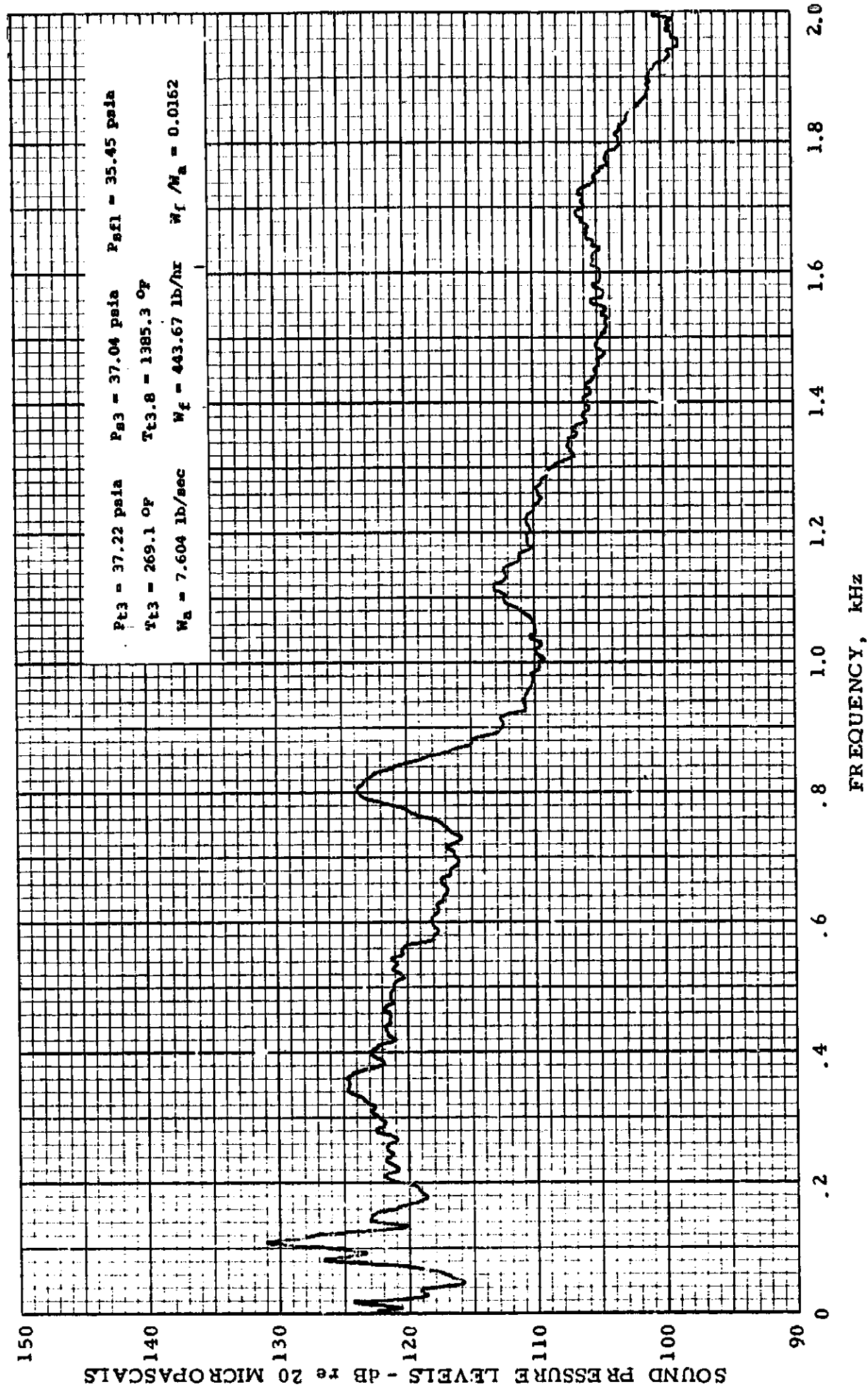
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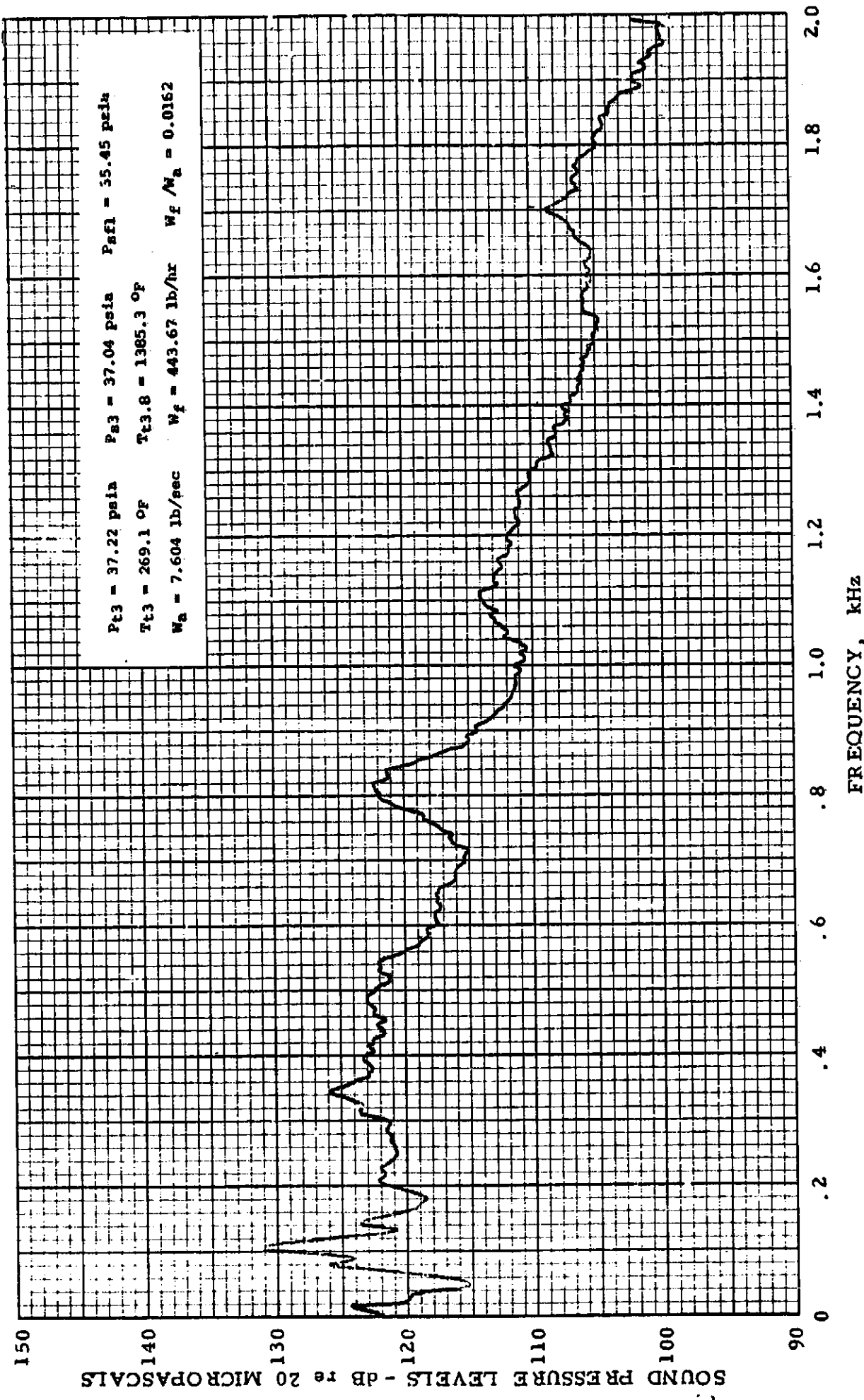
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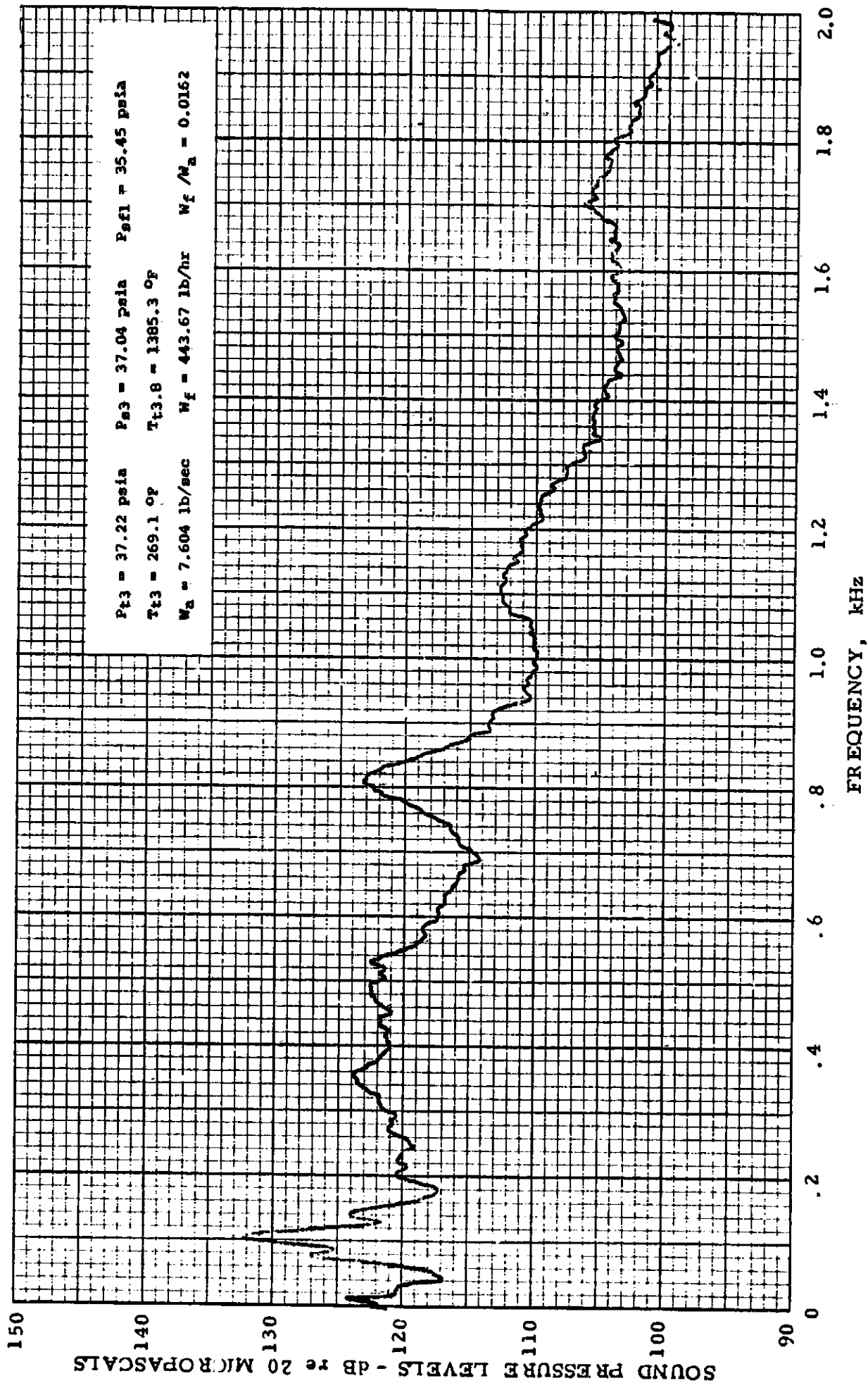
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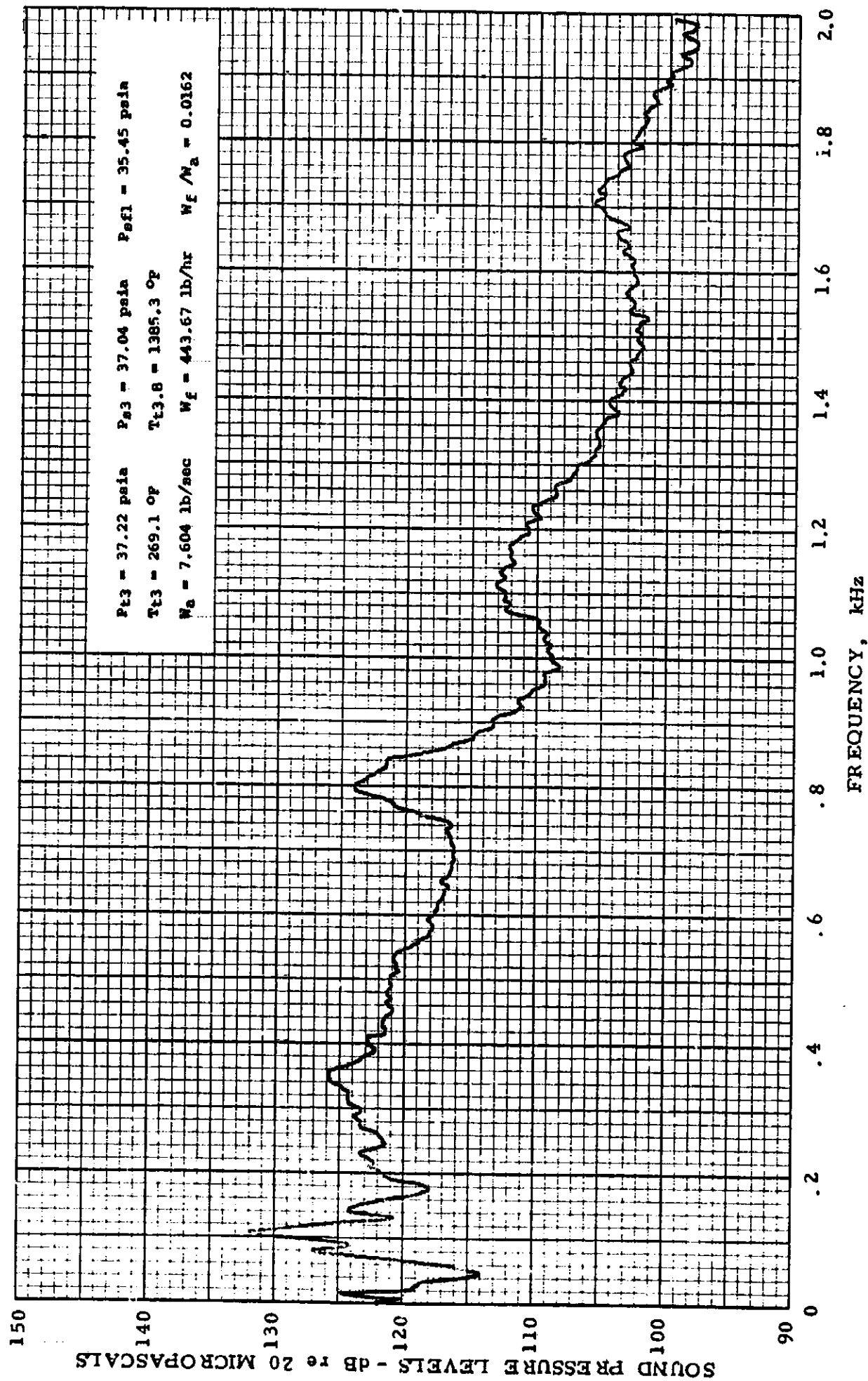
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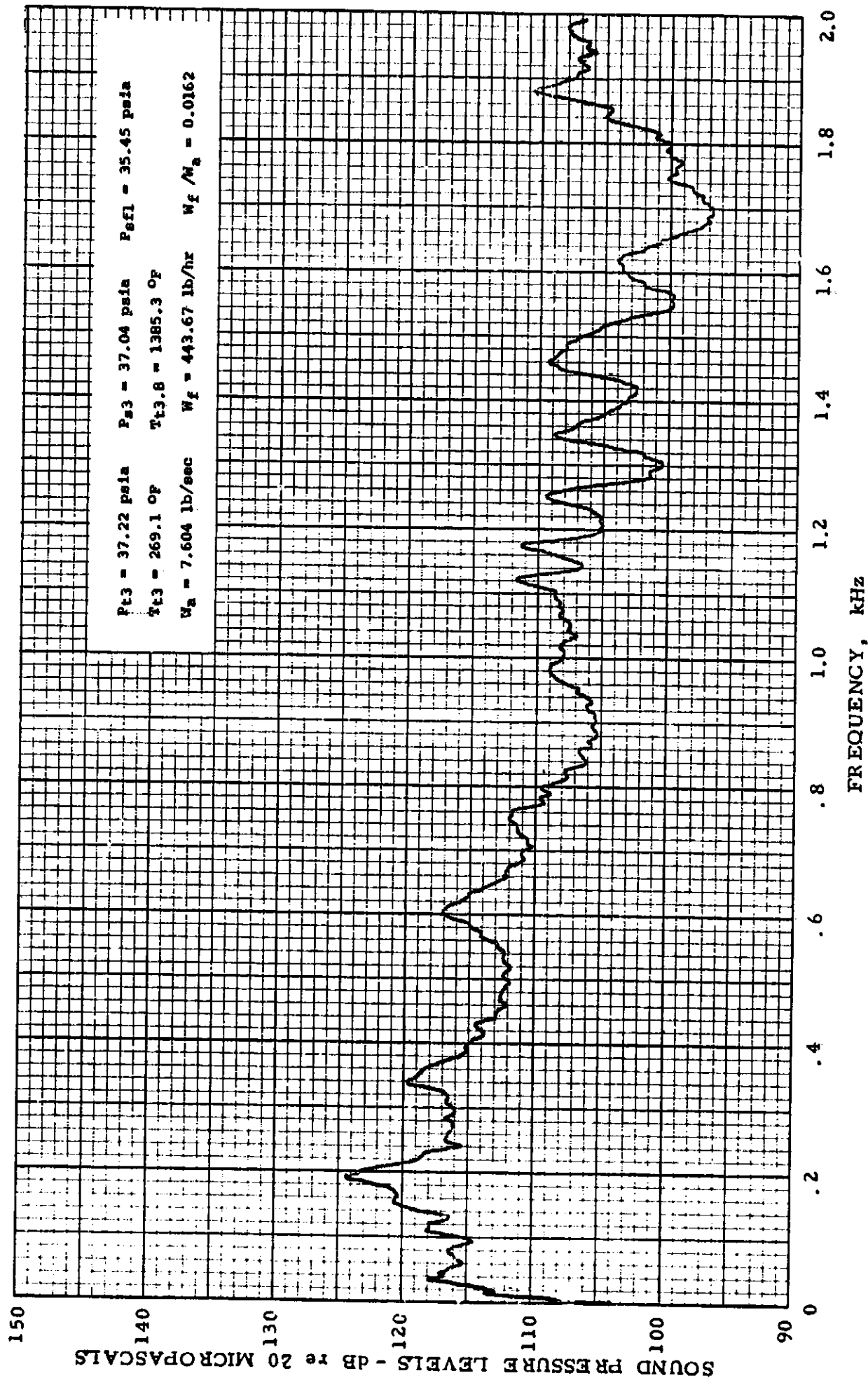
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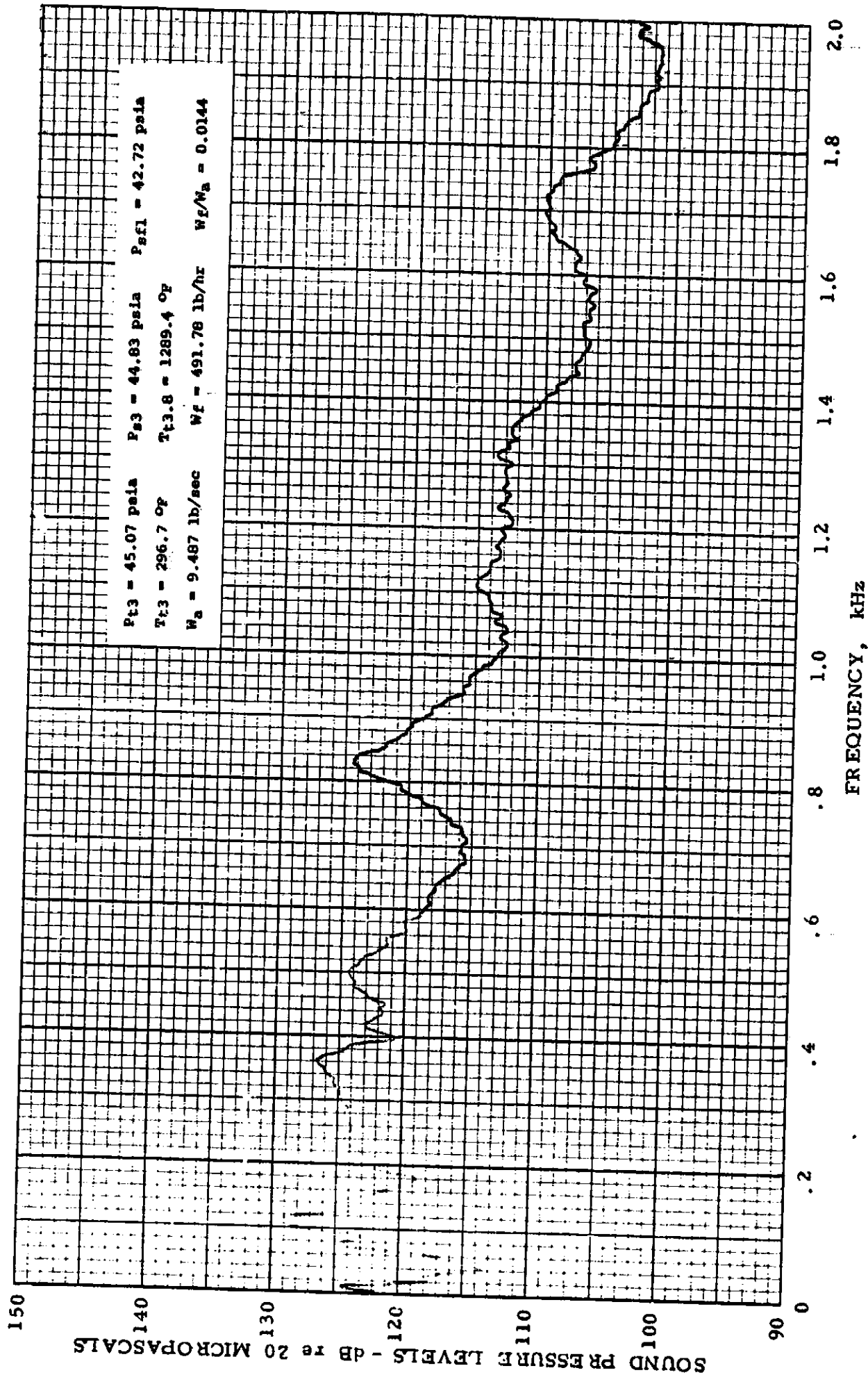
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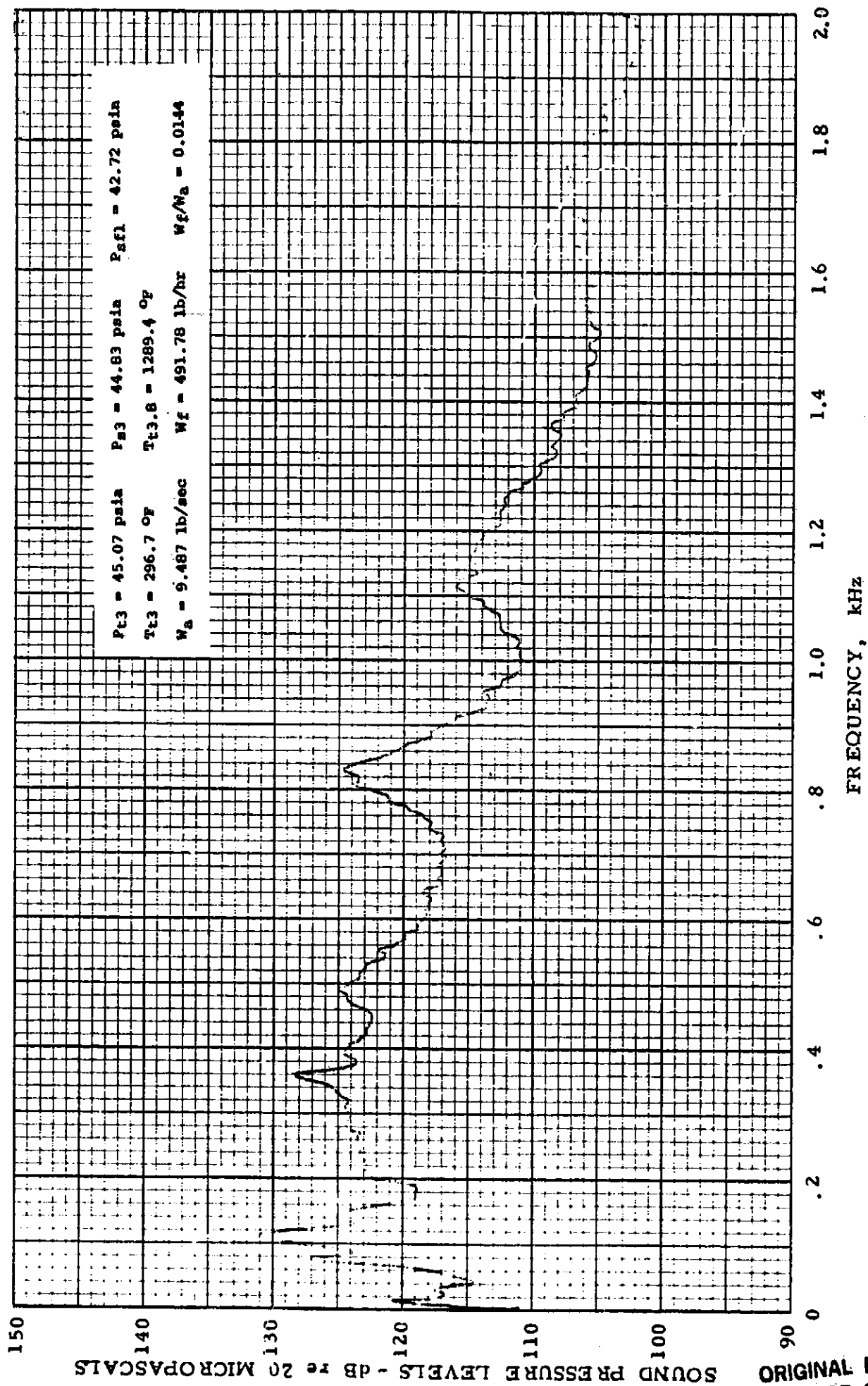
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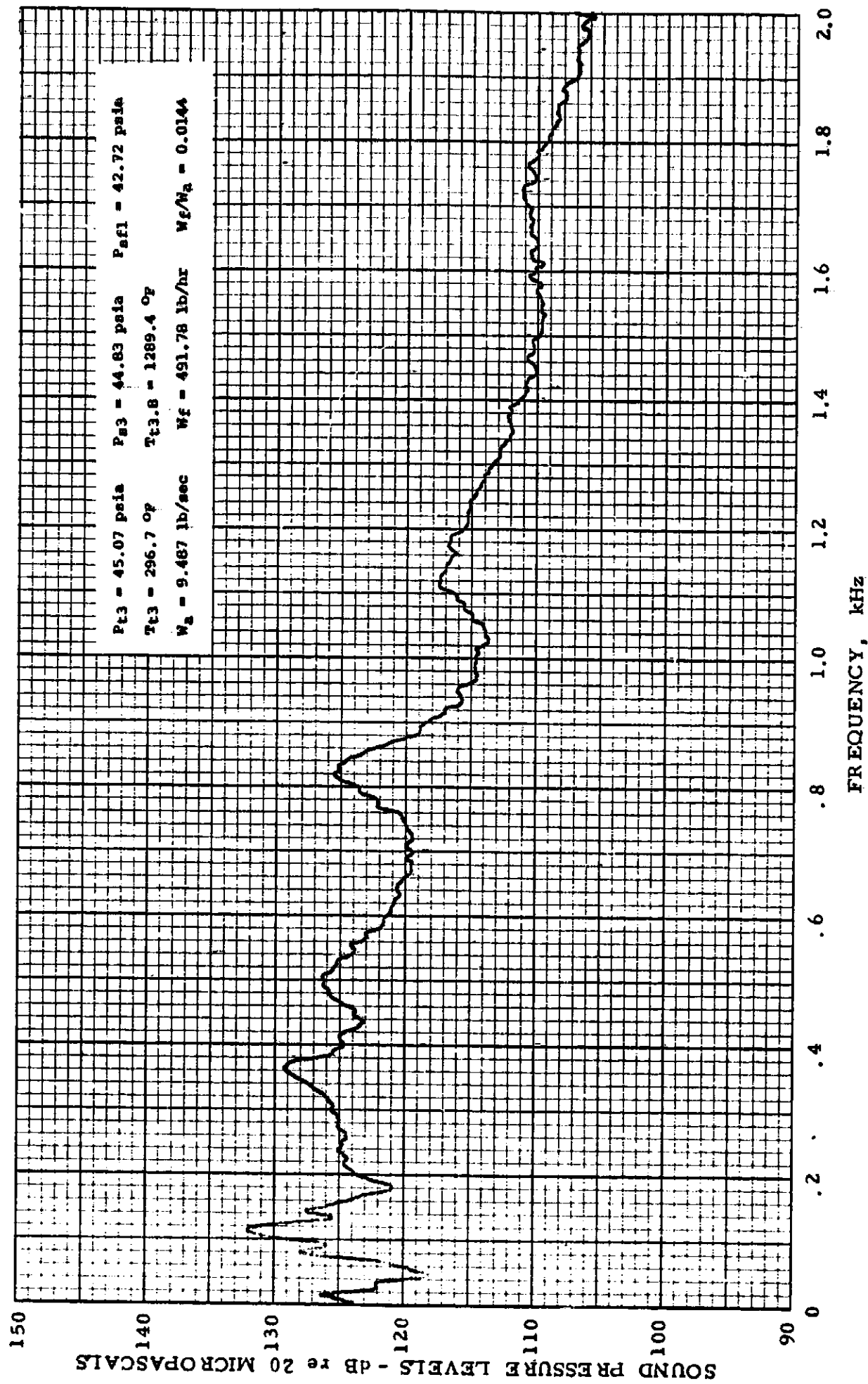
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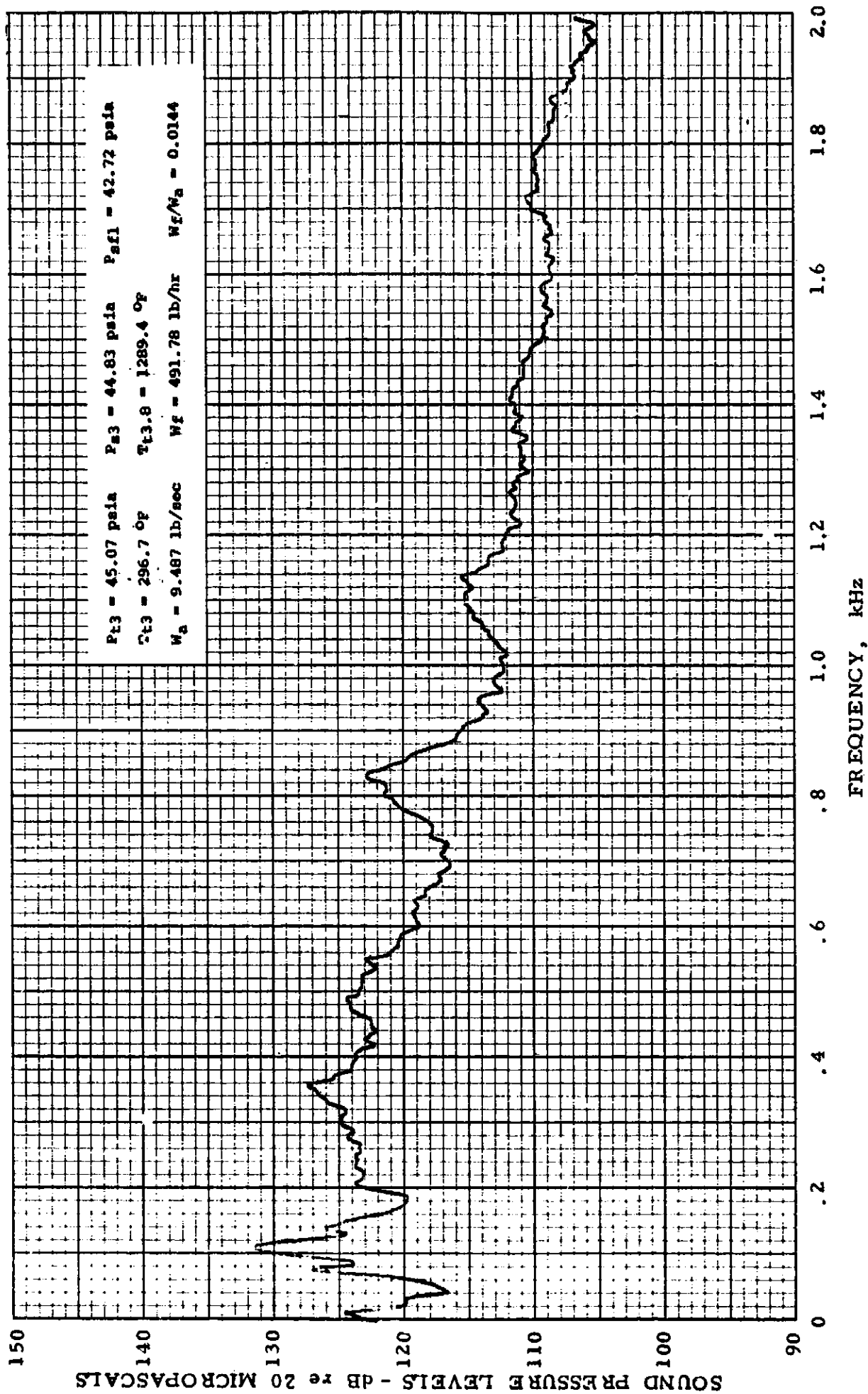
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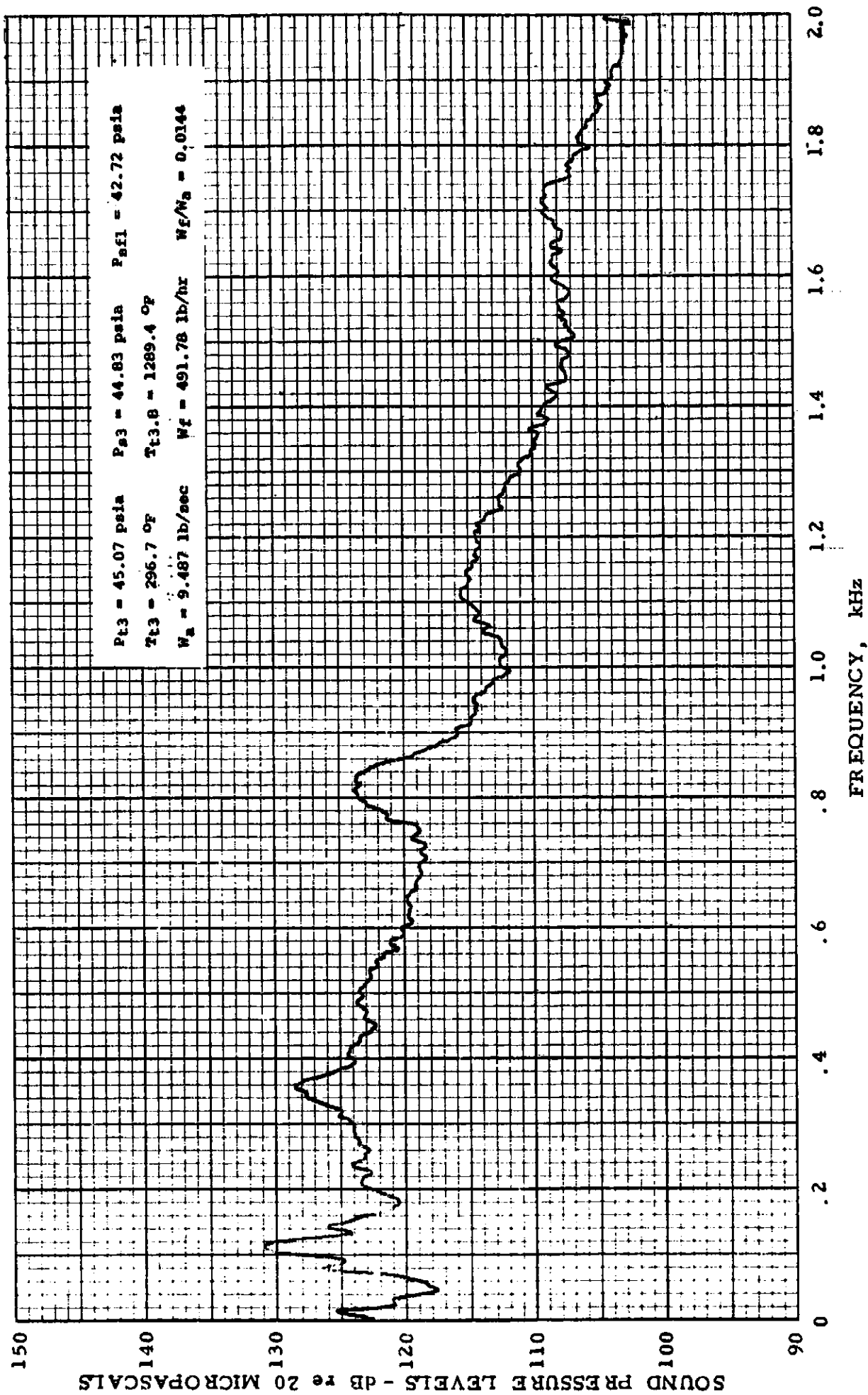
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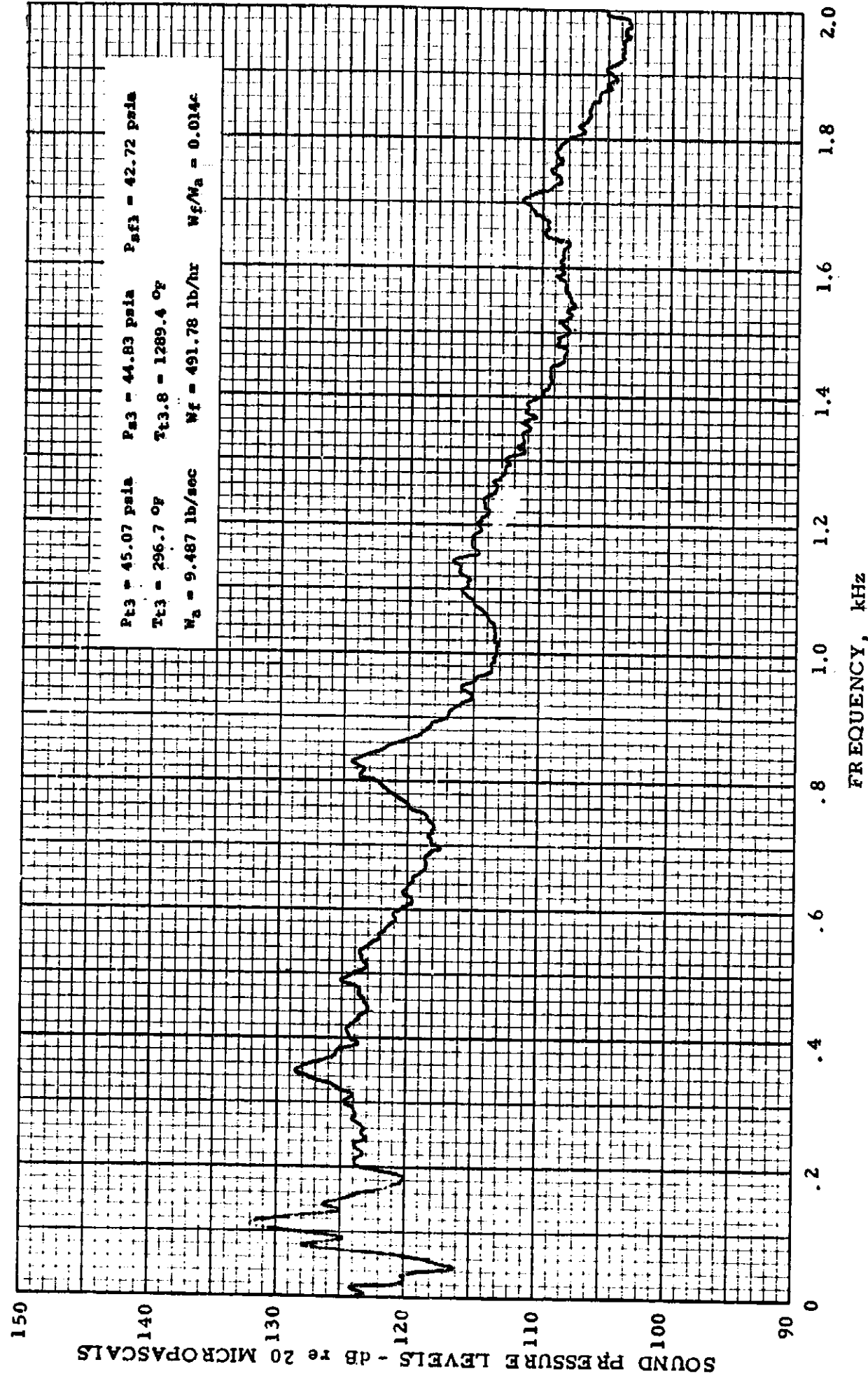
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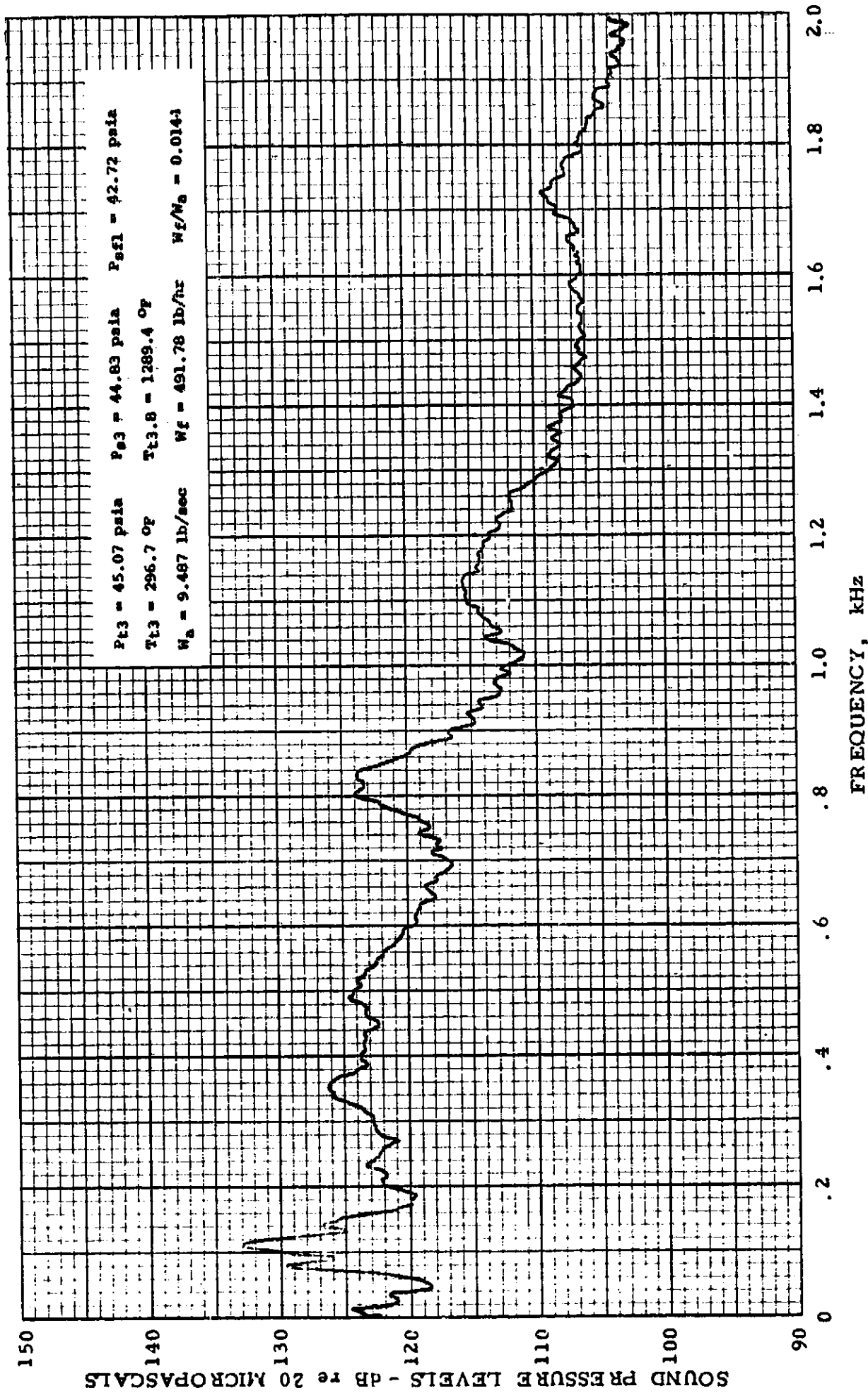
NARROW BAND SPECTRUM AT PROBE NUMBER 5 DURING RUN POINT NUMBER 203



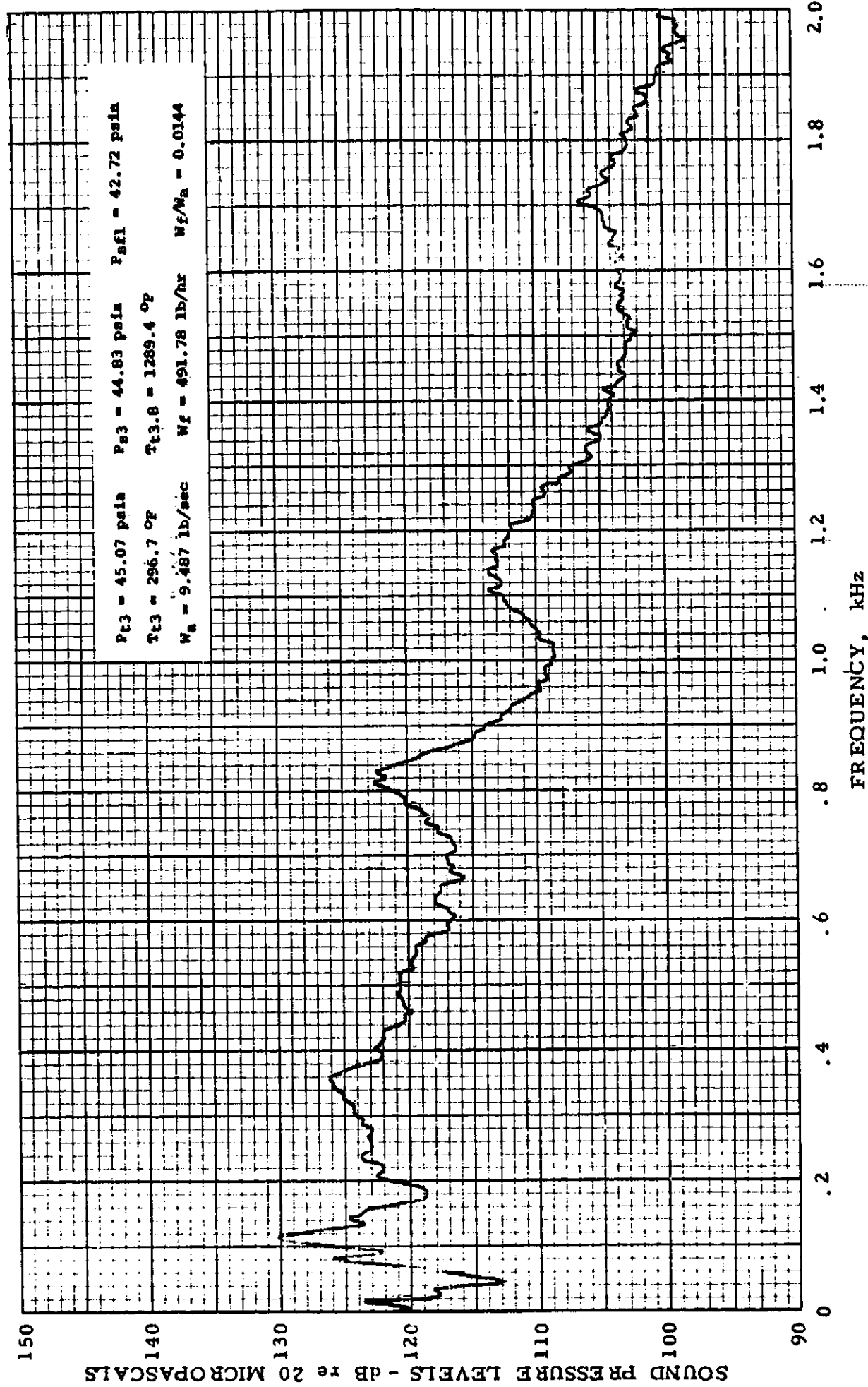
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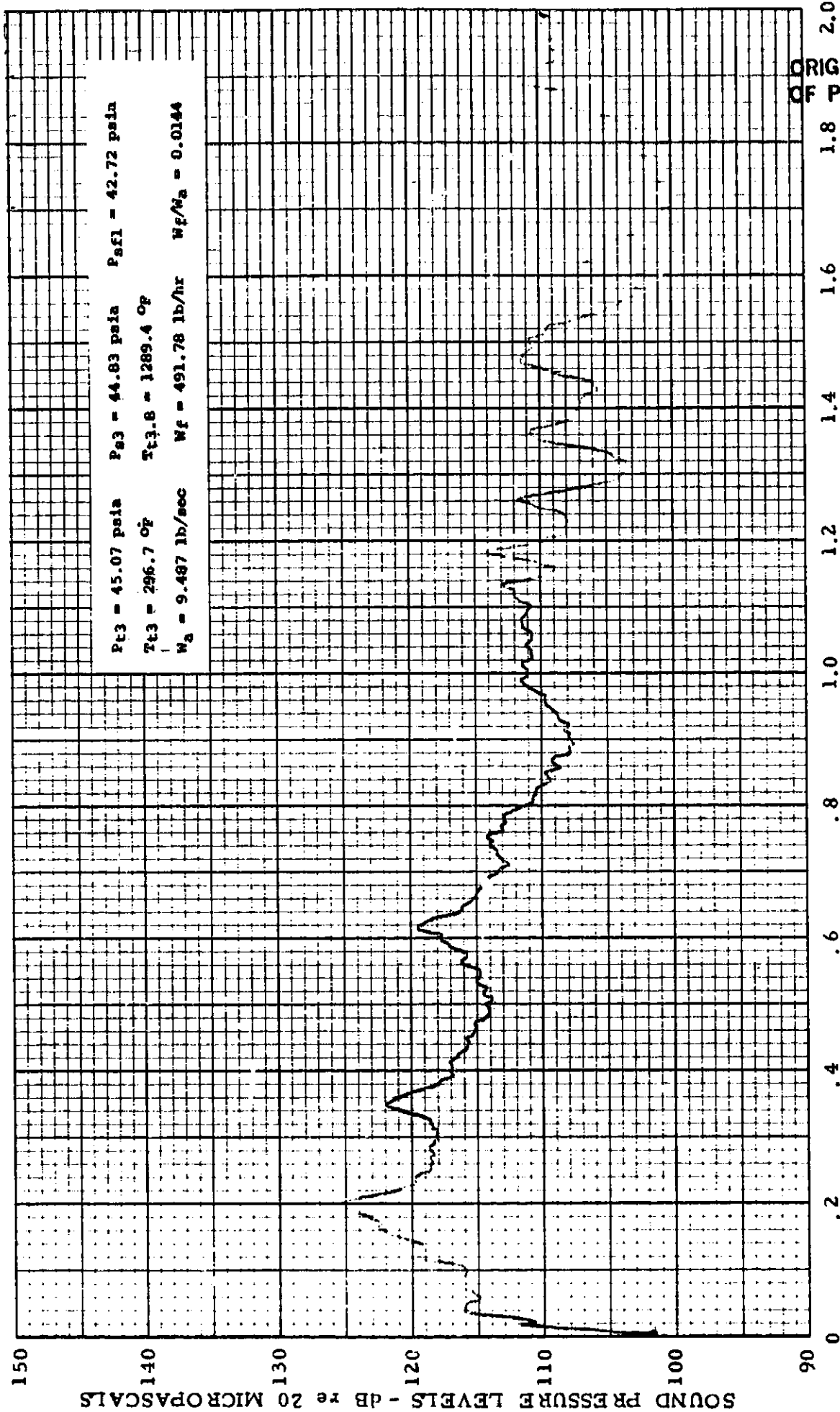
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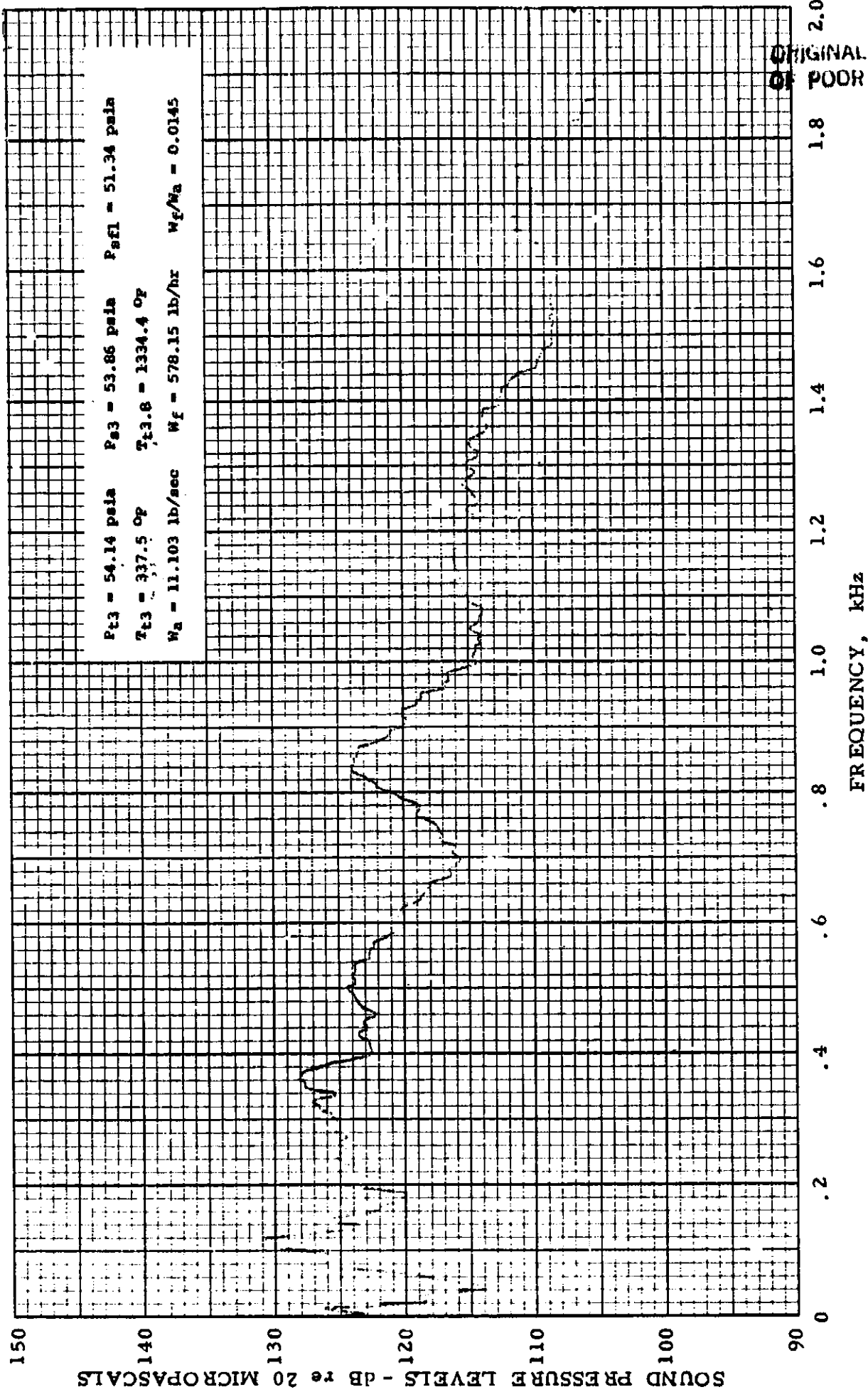


NARROW BAND SPECTRUM AT PROBE NUMBER 9 DURING RUN POINT NUMBER 203



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NARROW BAND SPECTRUM AT PROBE NUMBER 10 DURING RUN POINT NUMBER 203

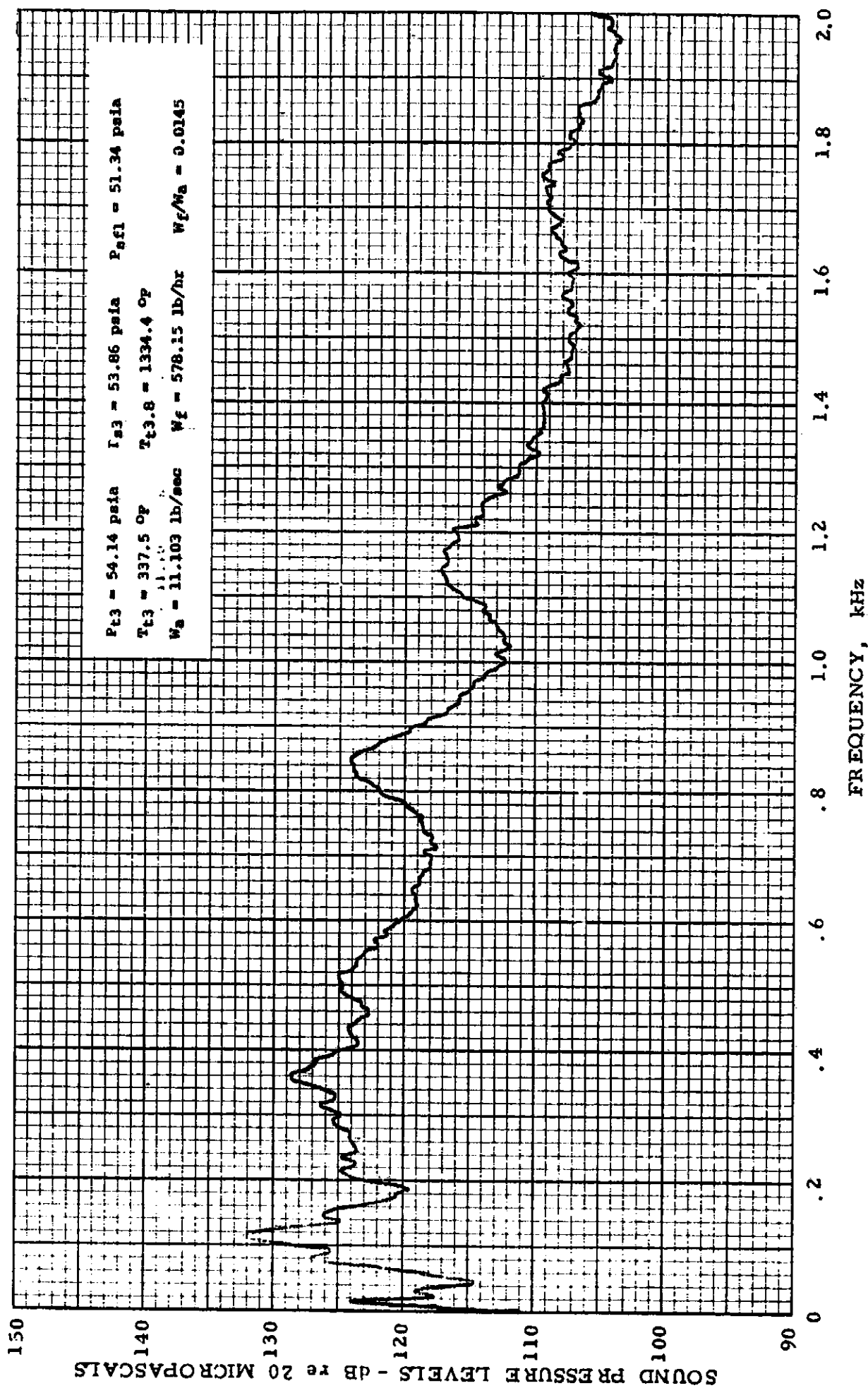


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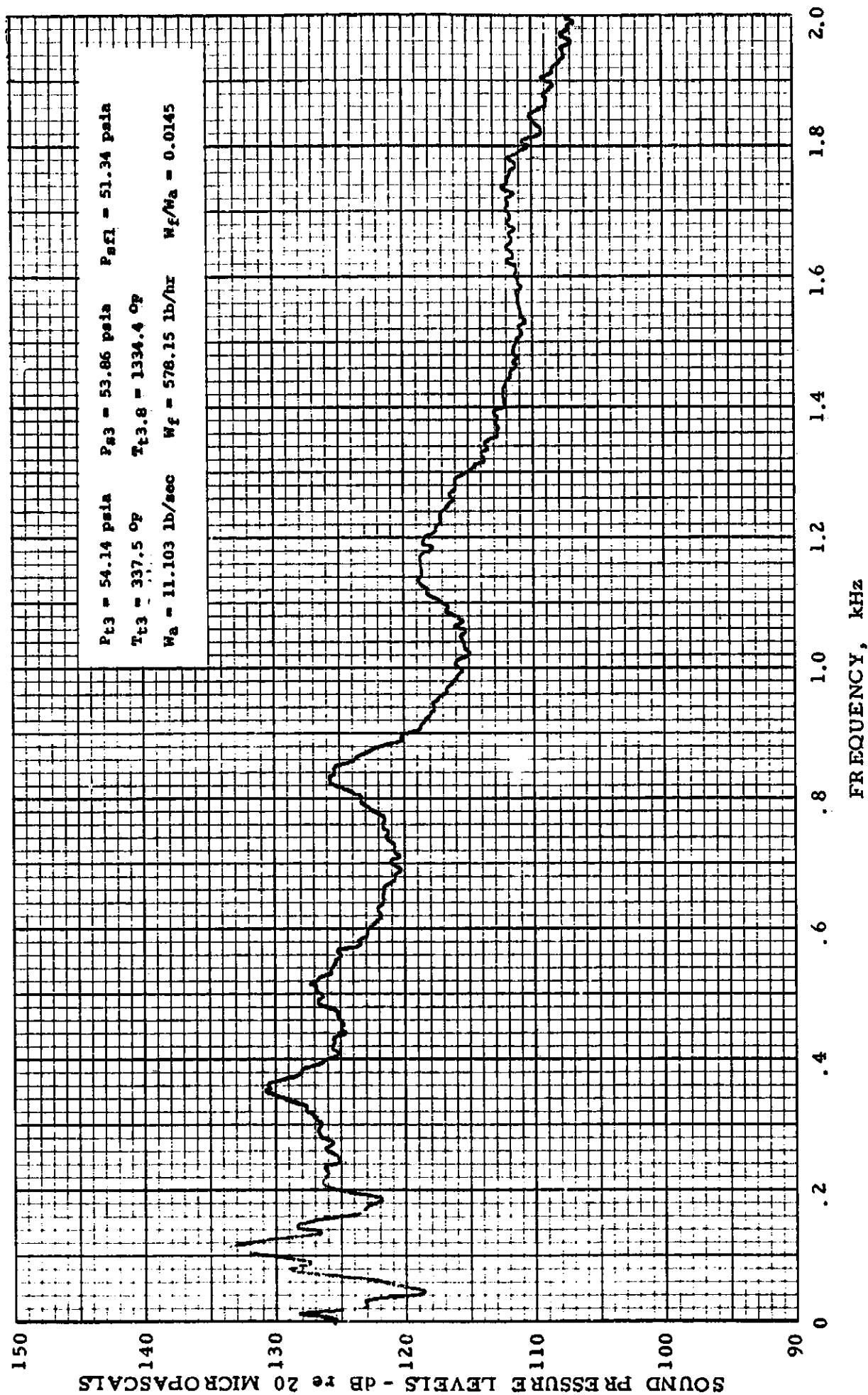
NARROW BAND SPECTRUM AT PROBE NUMBER 2 DURING RUN POINT NUMBER 206

FREQUENCY, kHz

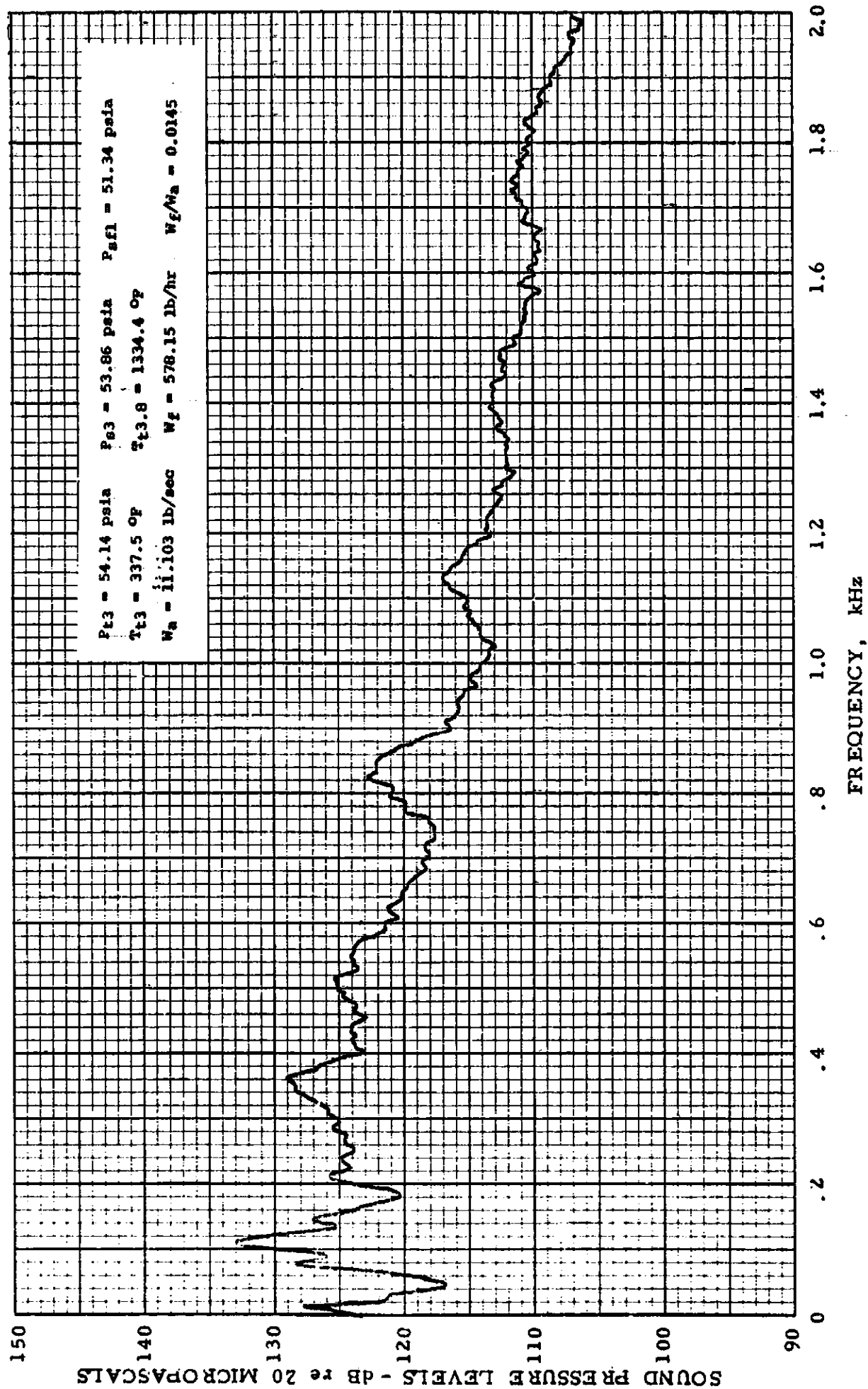
SOUND PRESSURE LEVELS - db re 20 MICROPASCALS



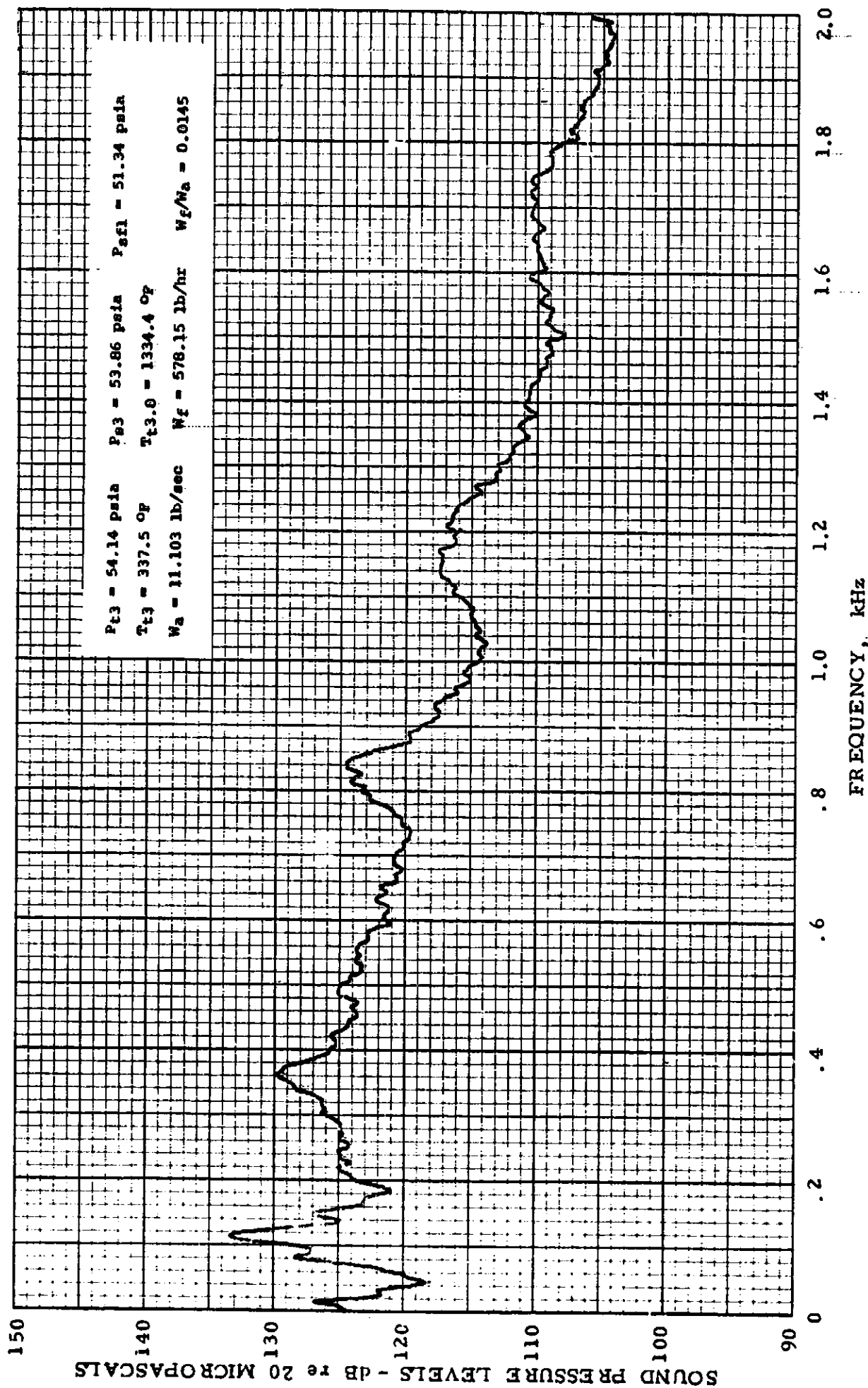
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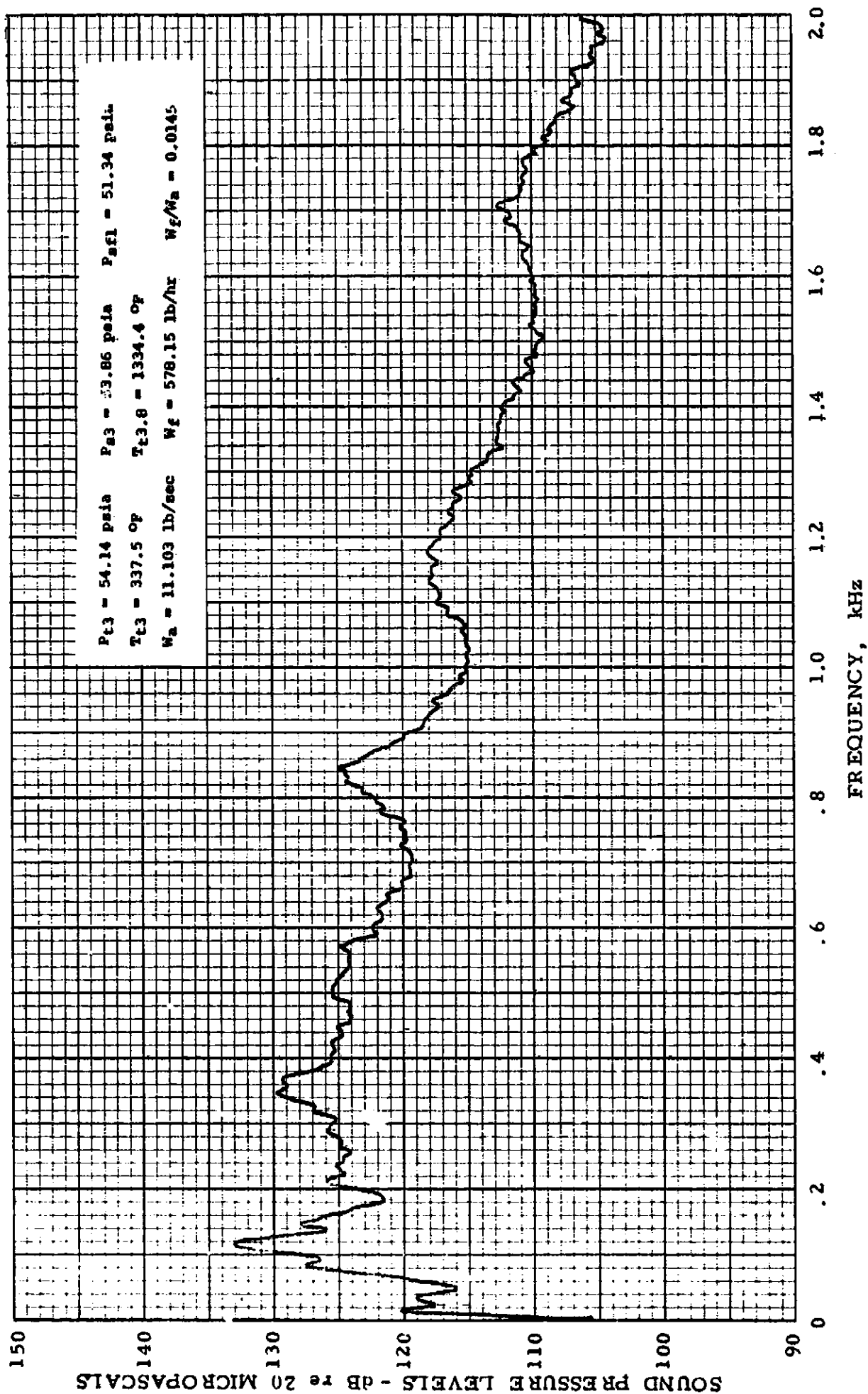
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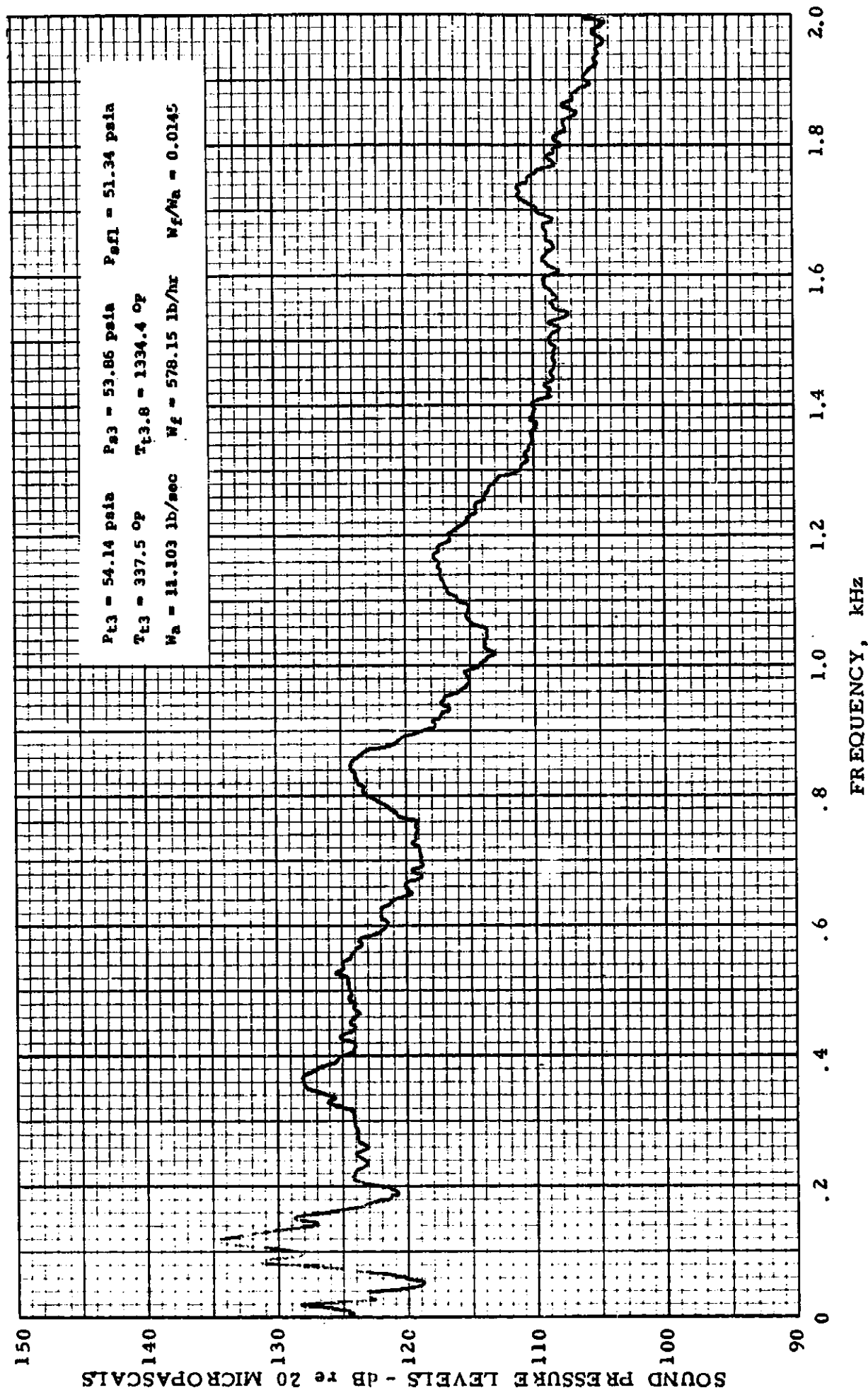
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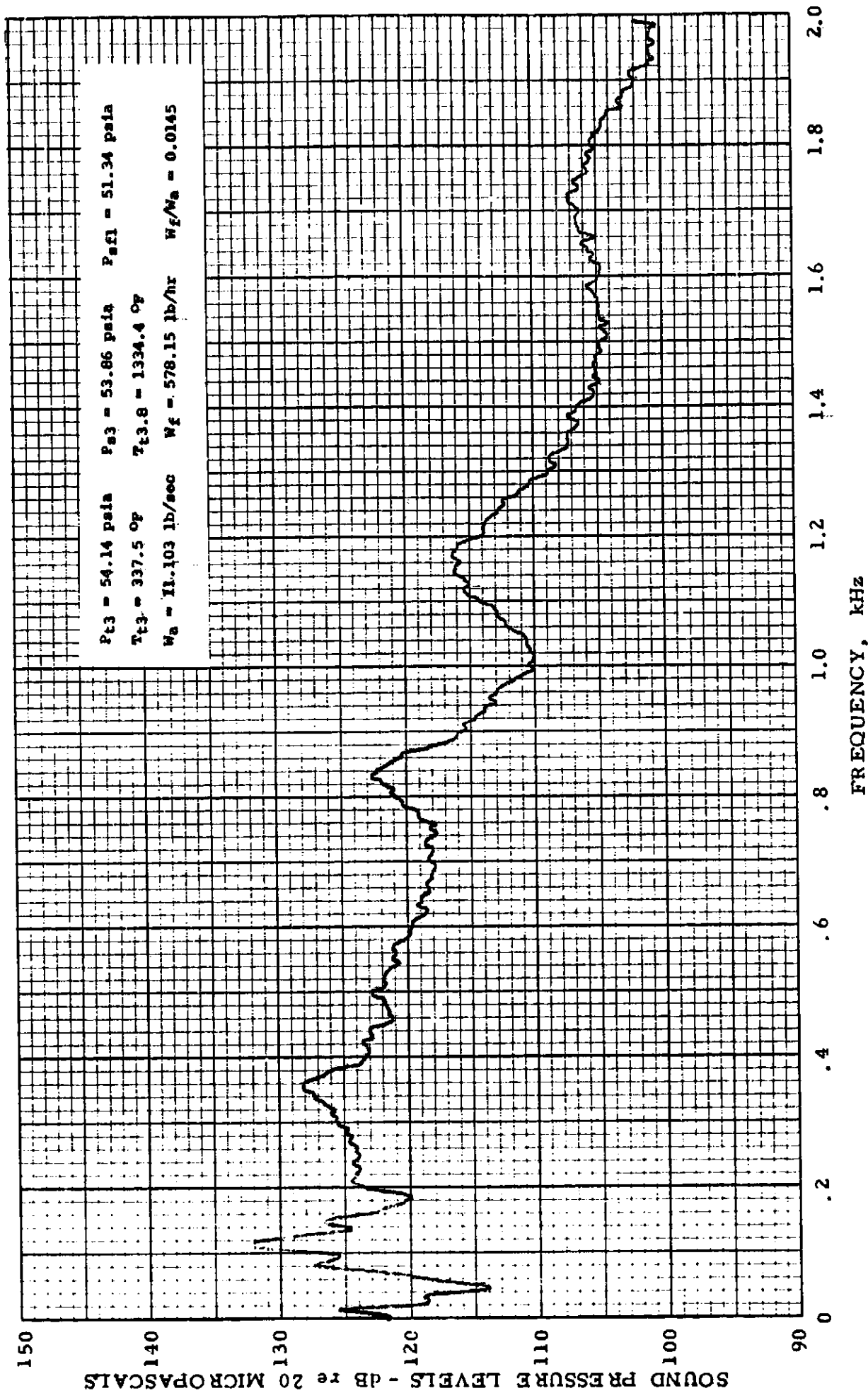
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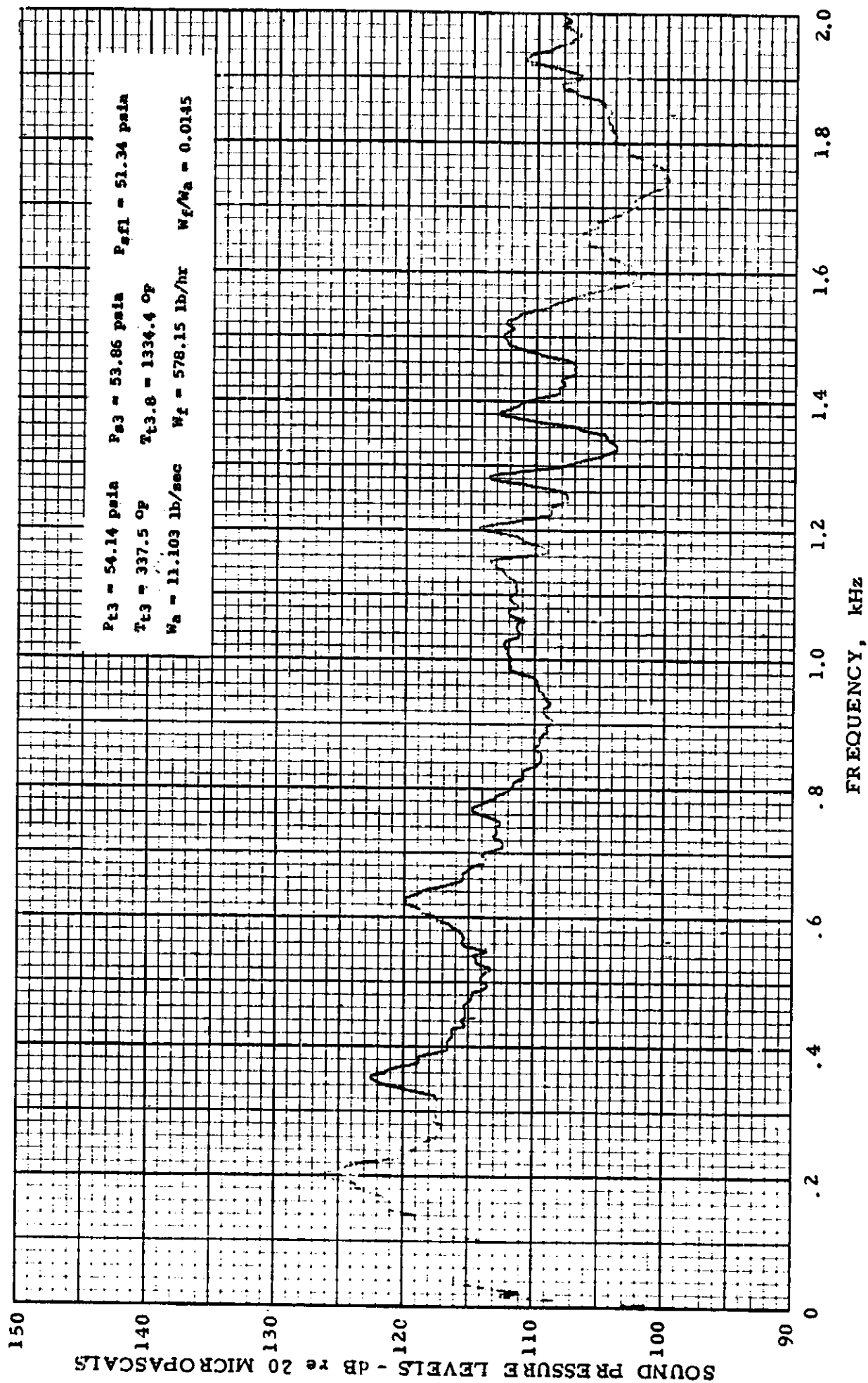
NARROW BAND SPECTRUM AT PROBE NUMBER 7 DURING RUN POINT NUMBER 206



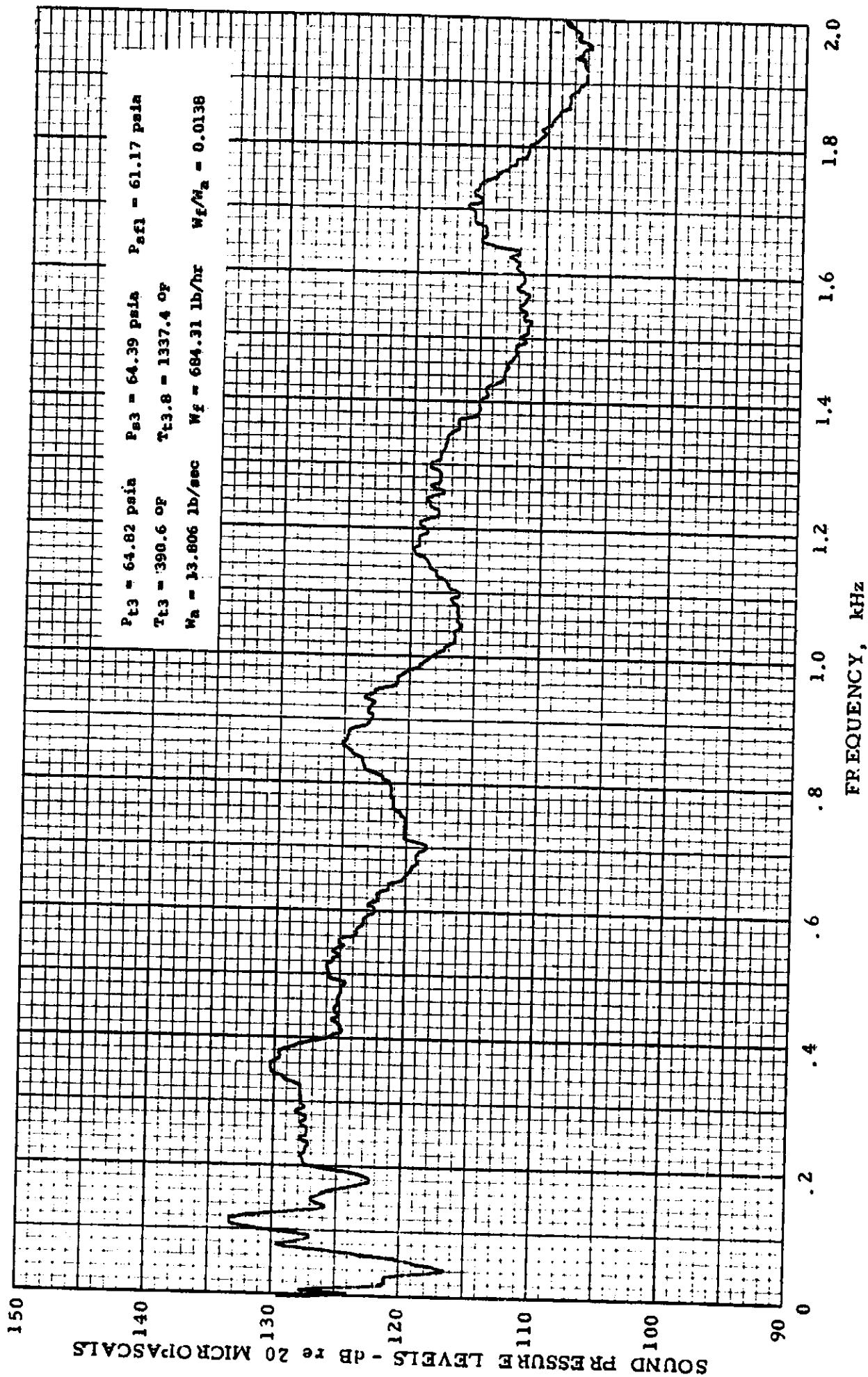
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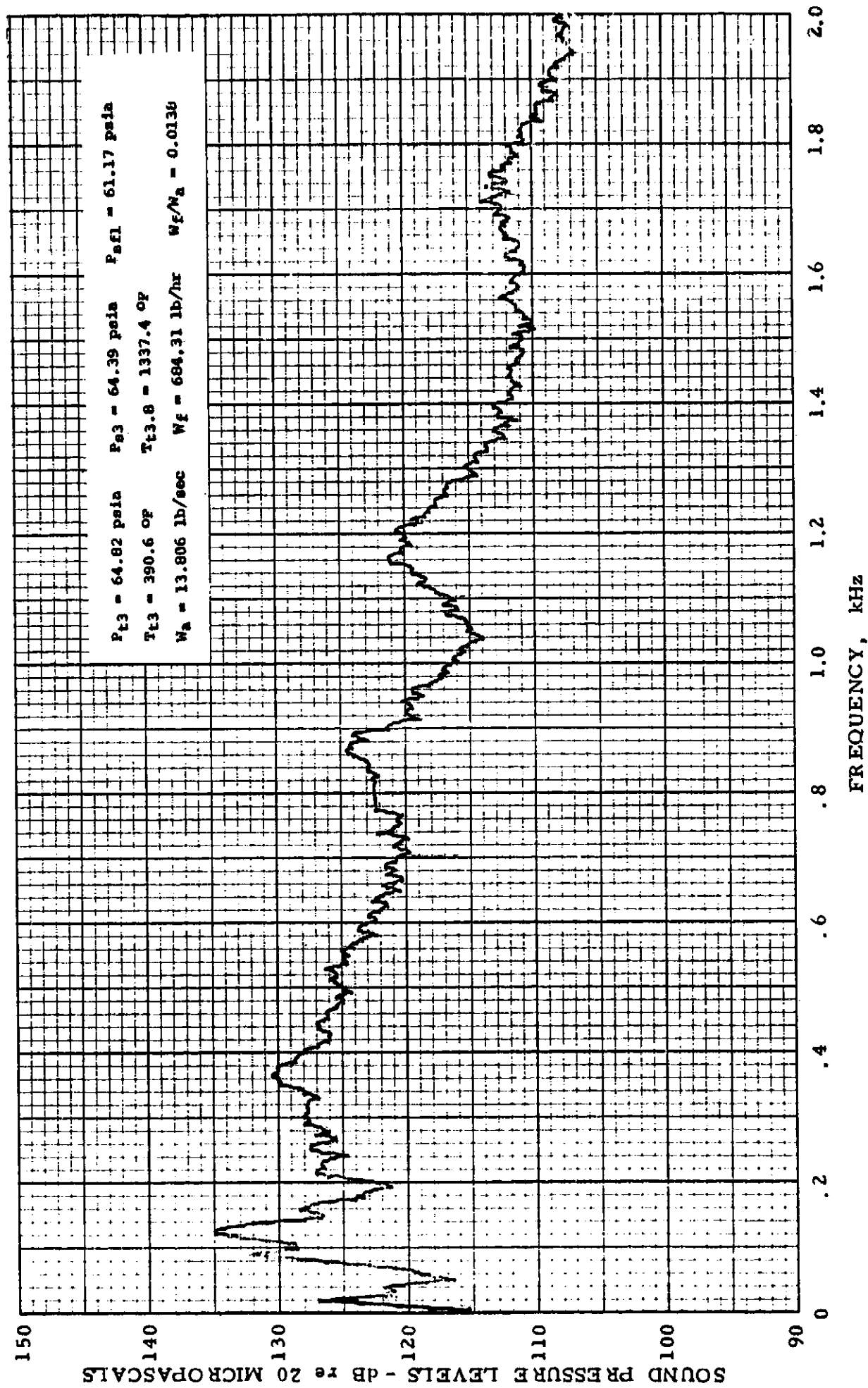
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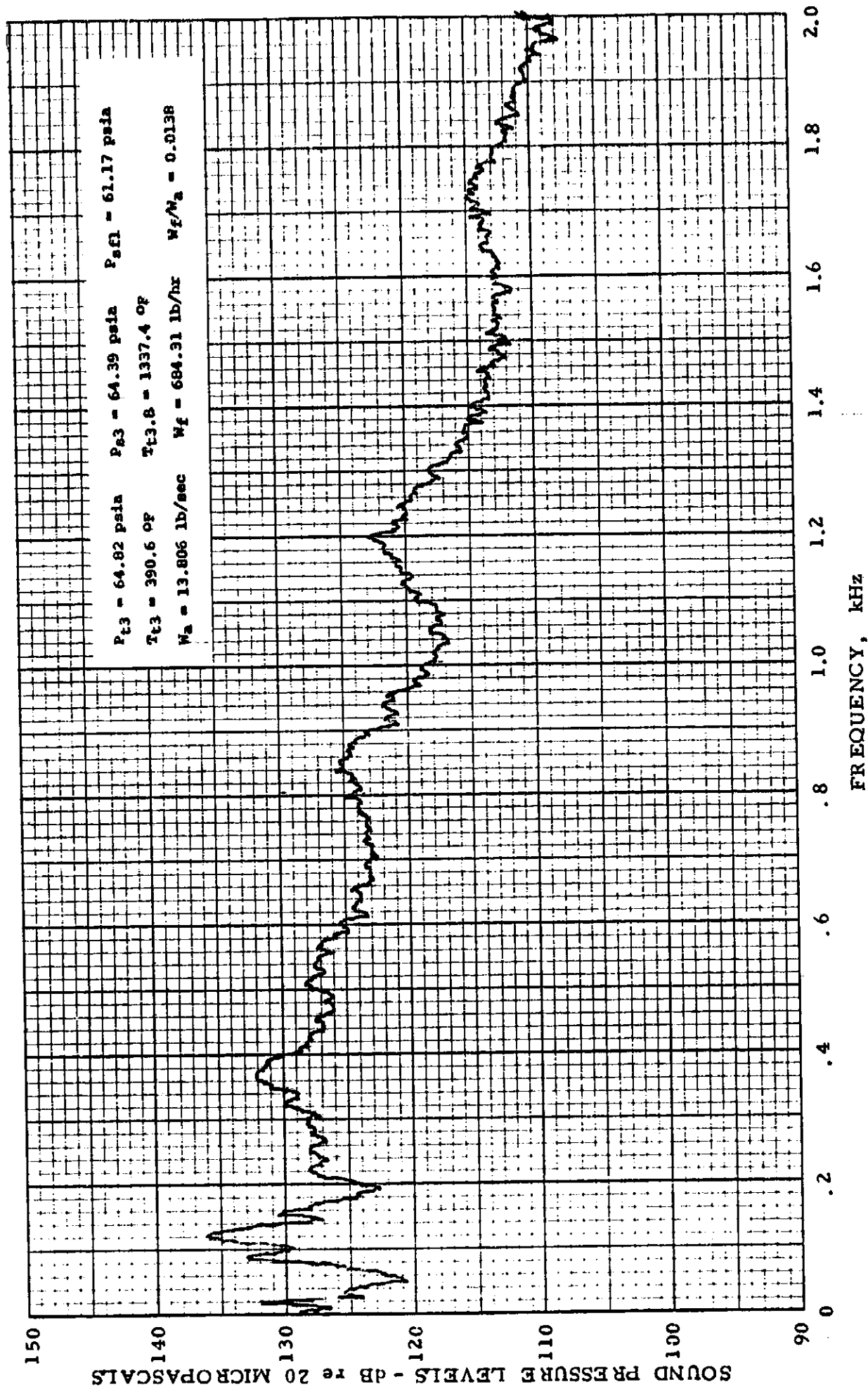
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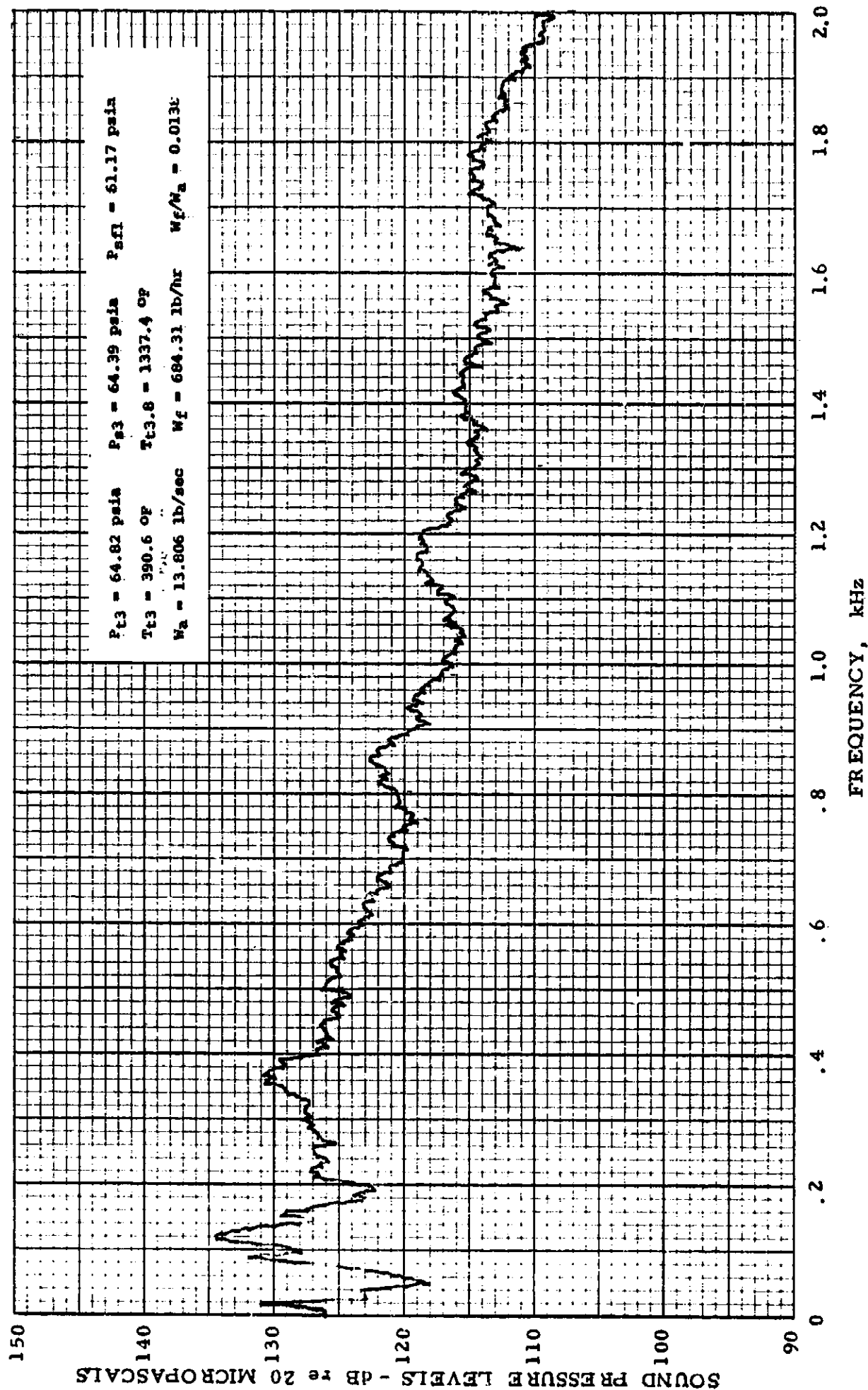
NARROW BAND SPECTRUM AT PROBE NUMBER 2 DURING RUN POINT NUMBER 207



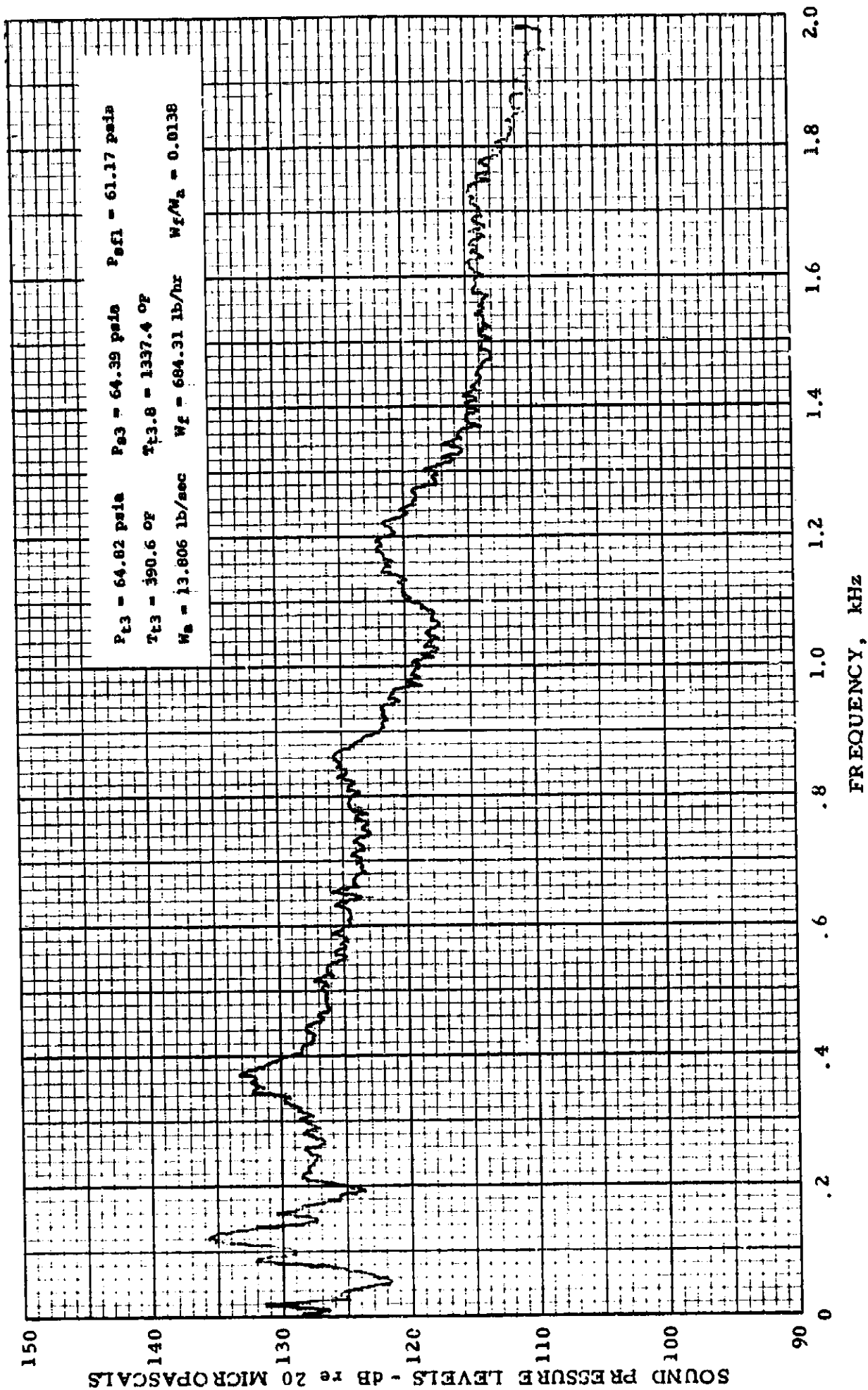
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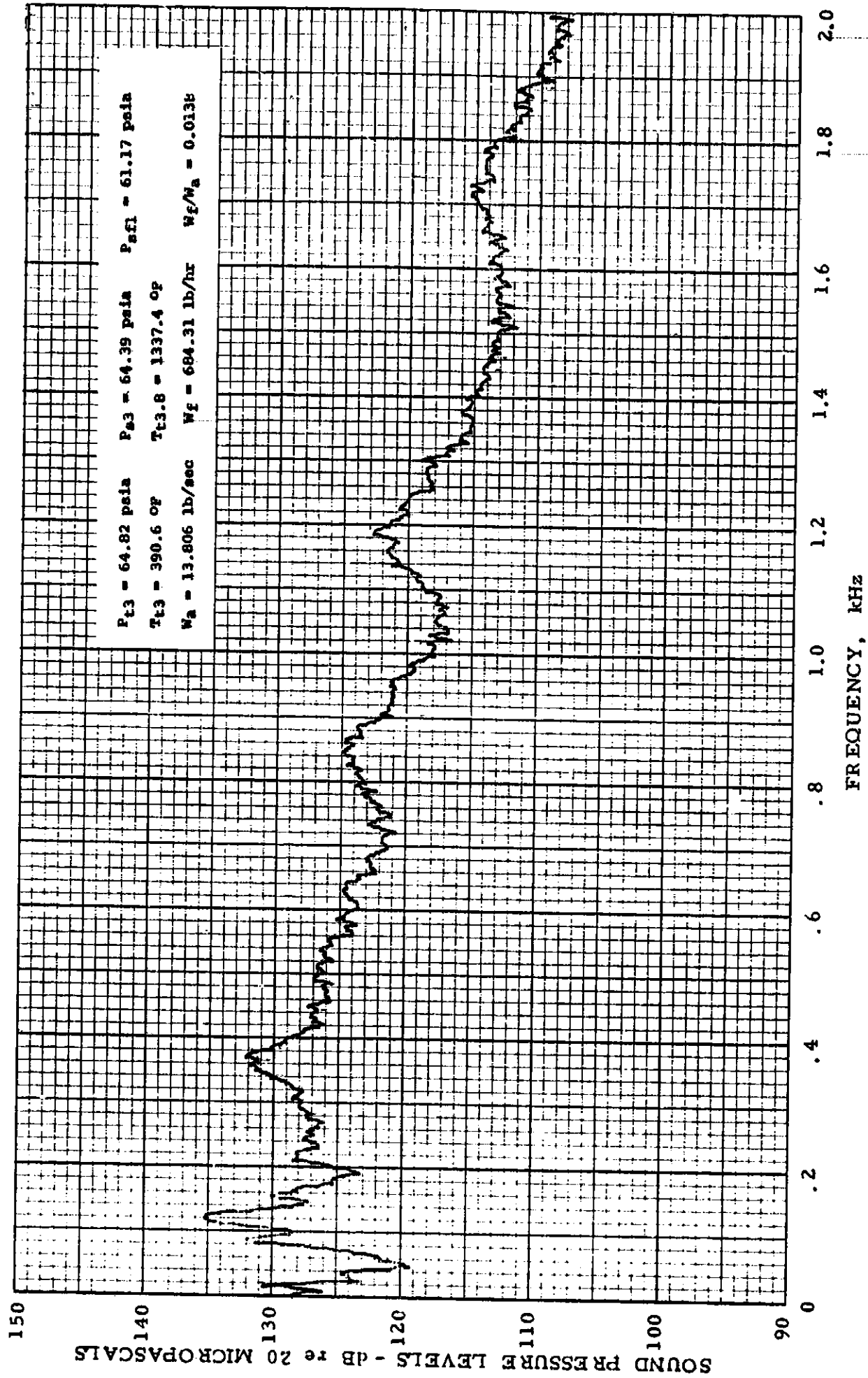
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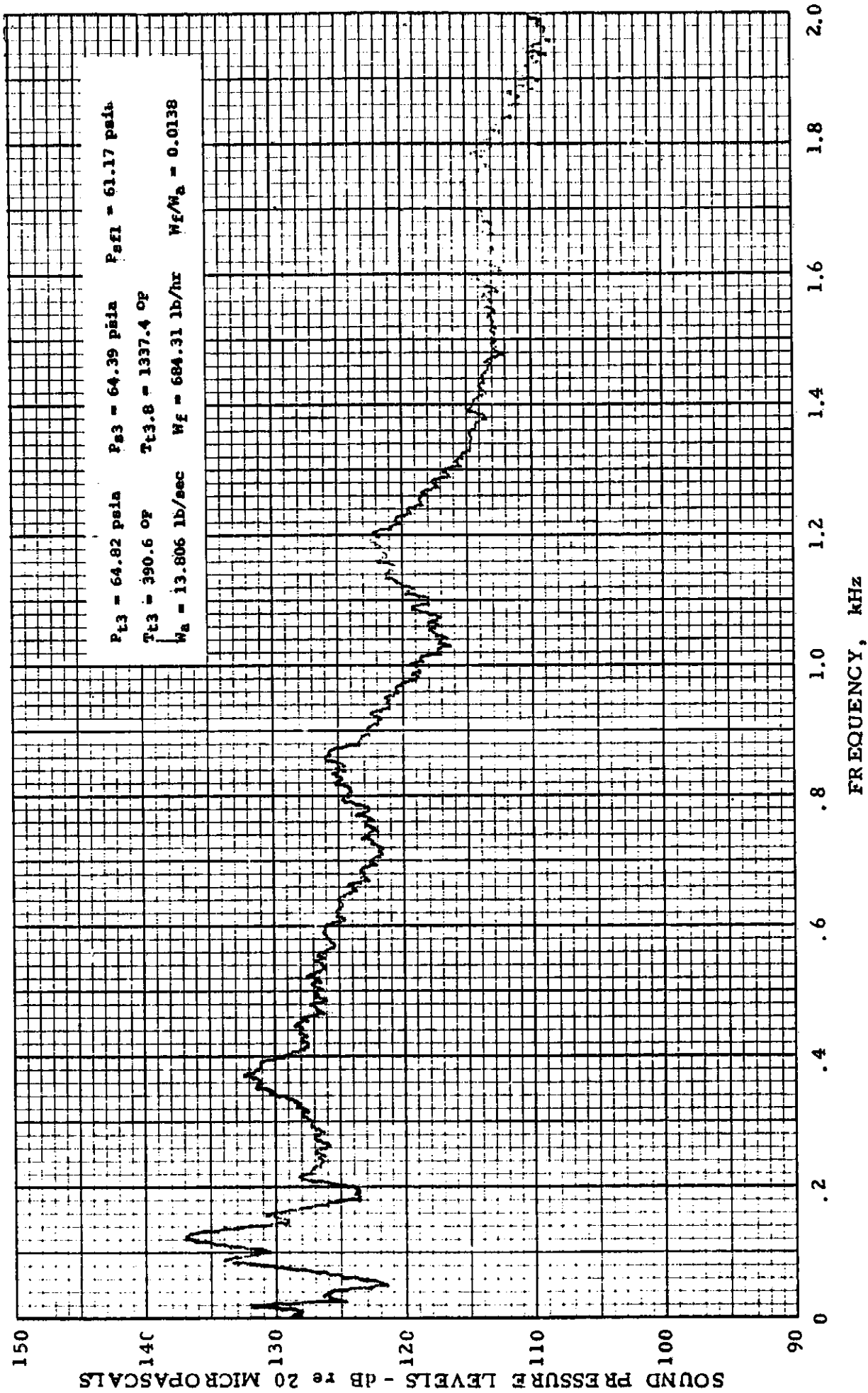
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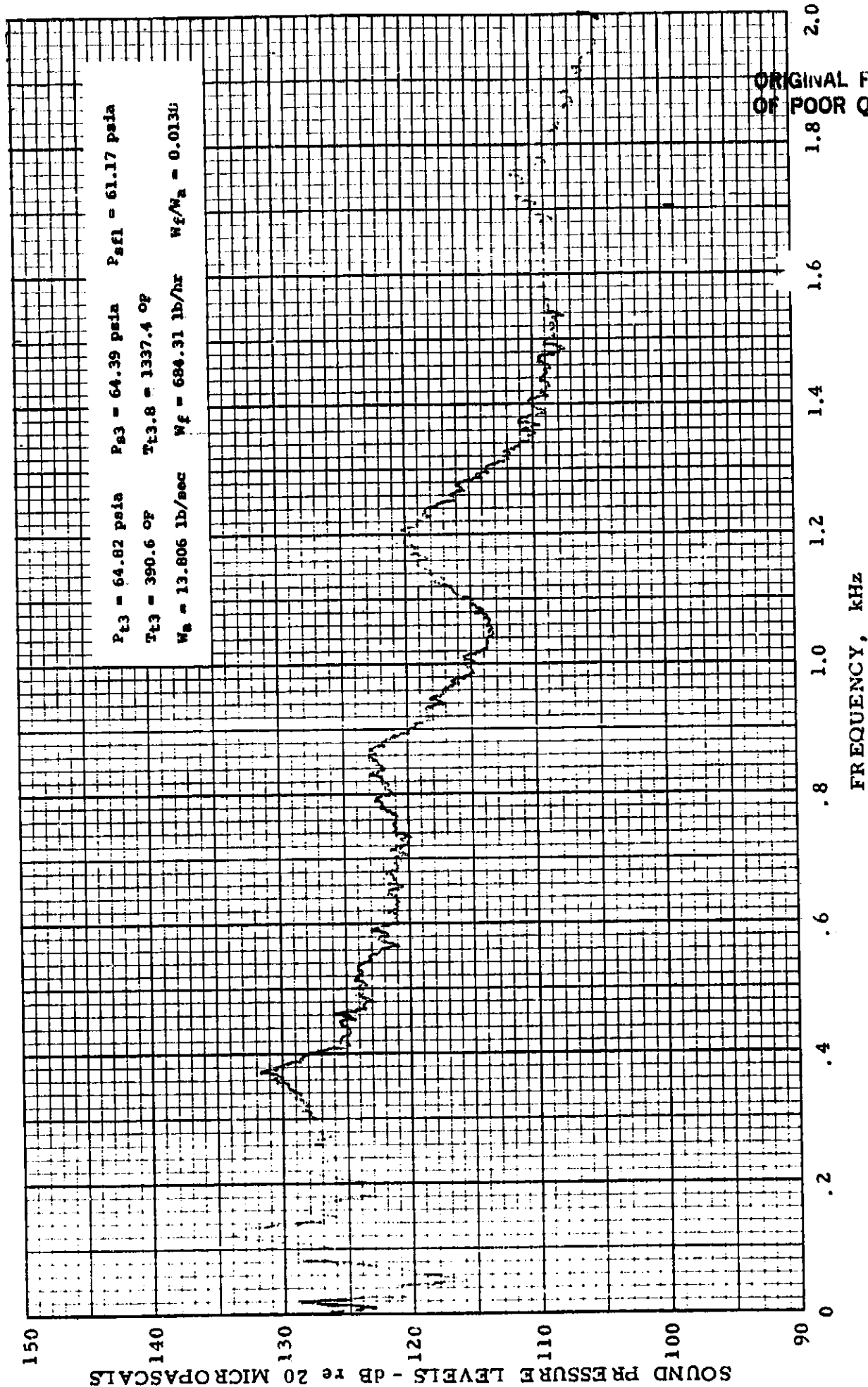
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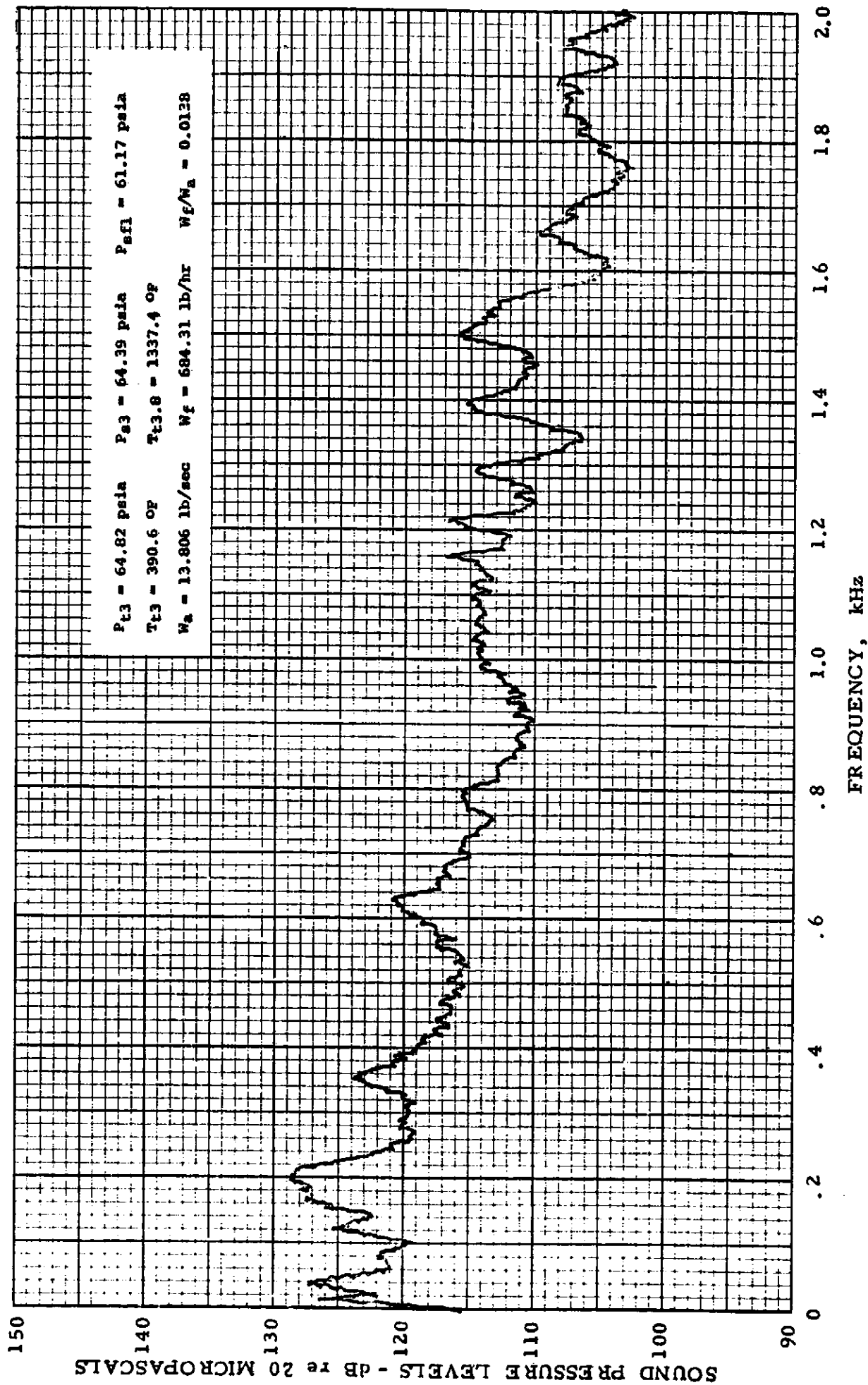


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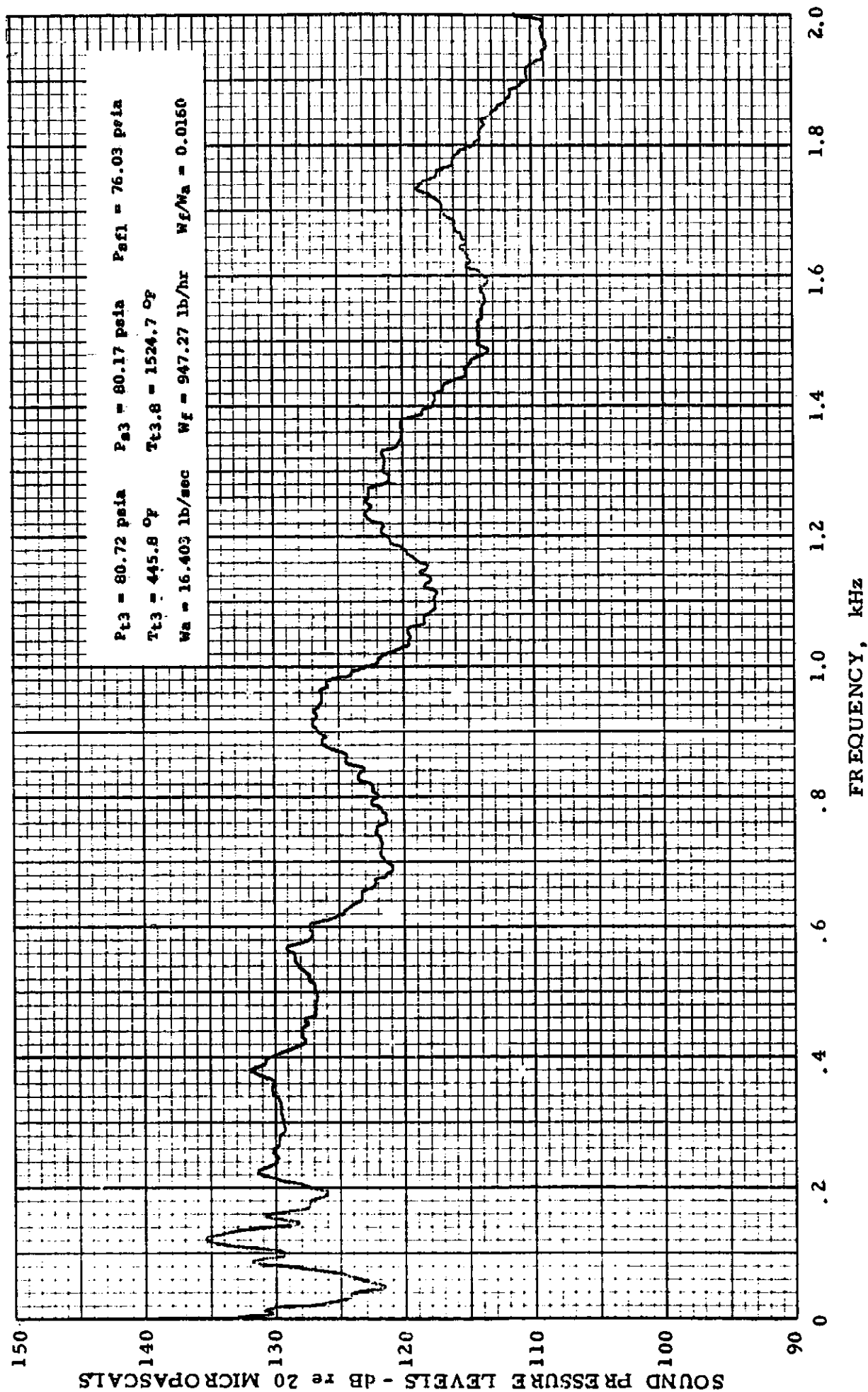


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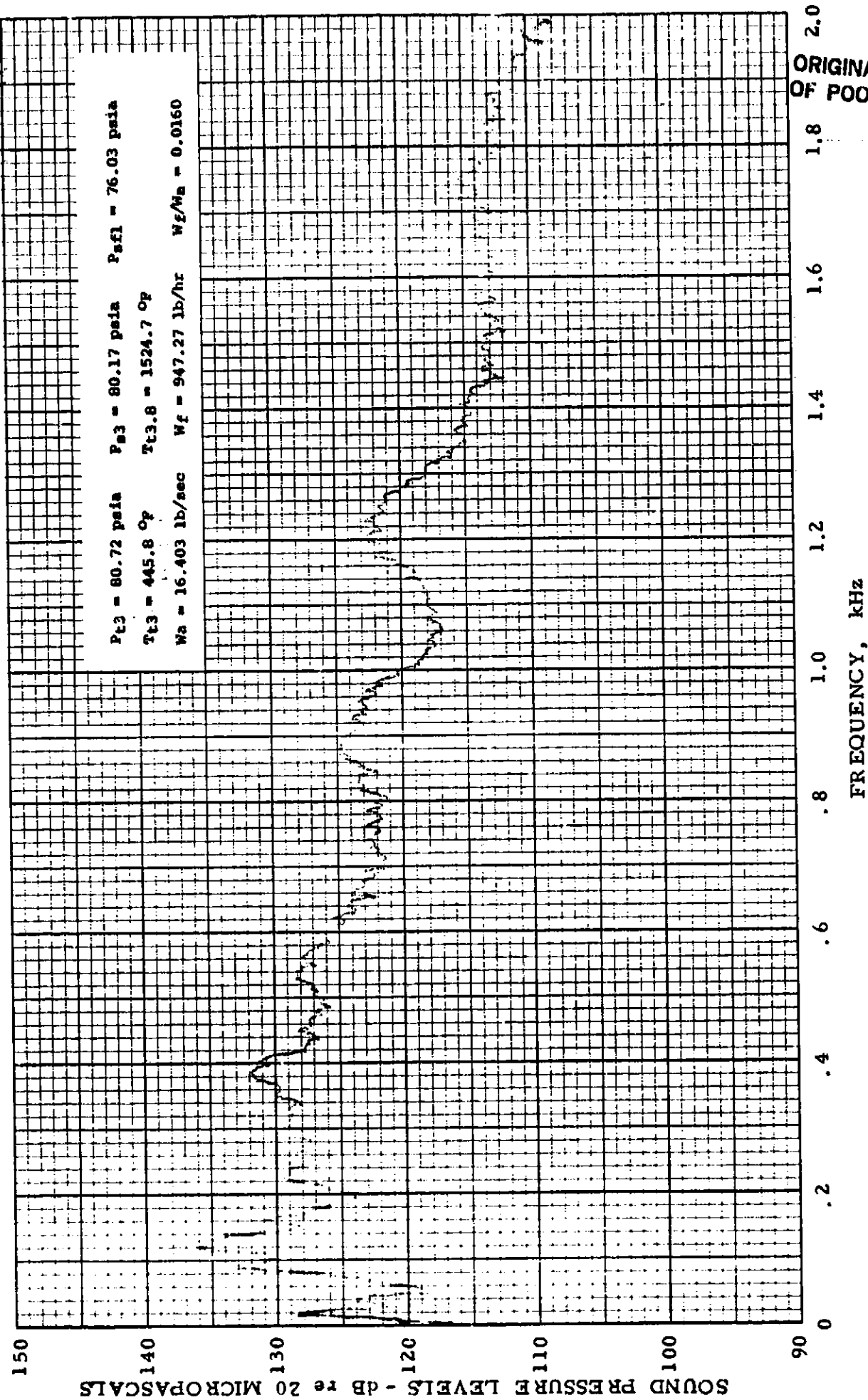
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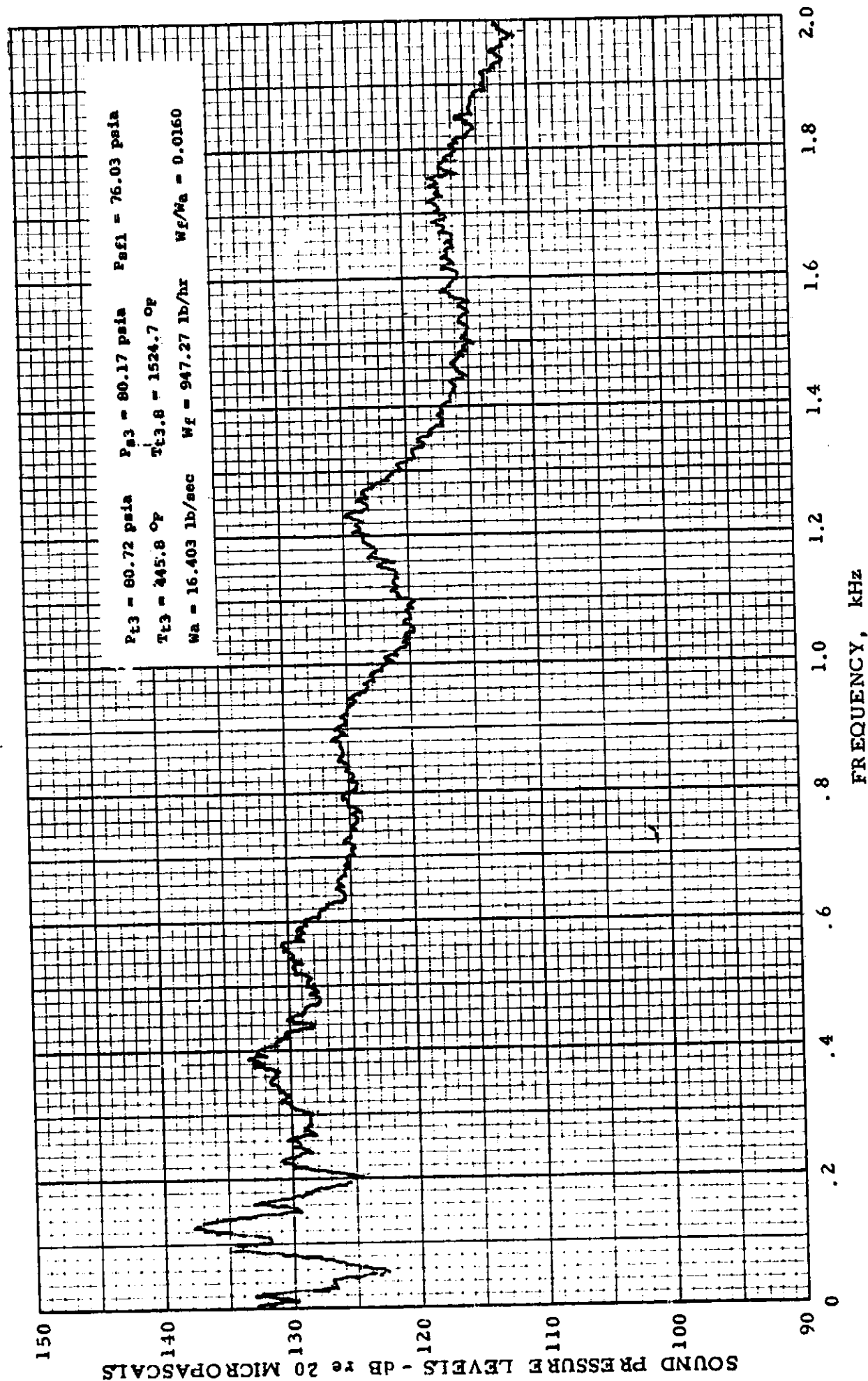


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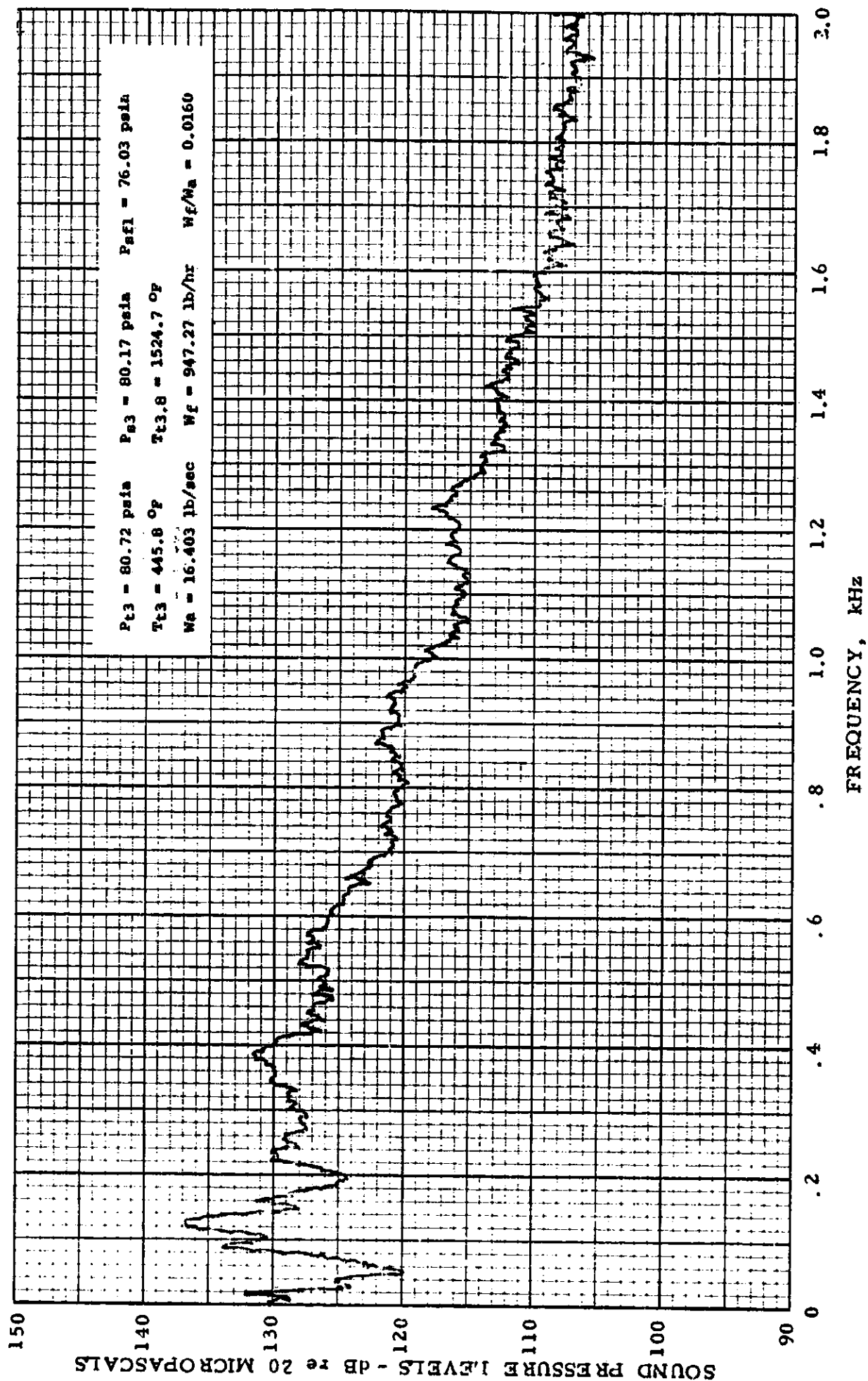


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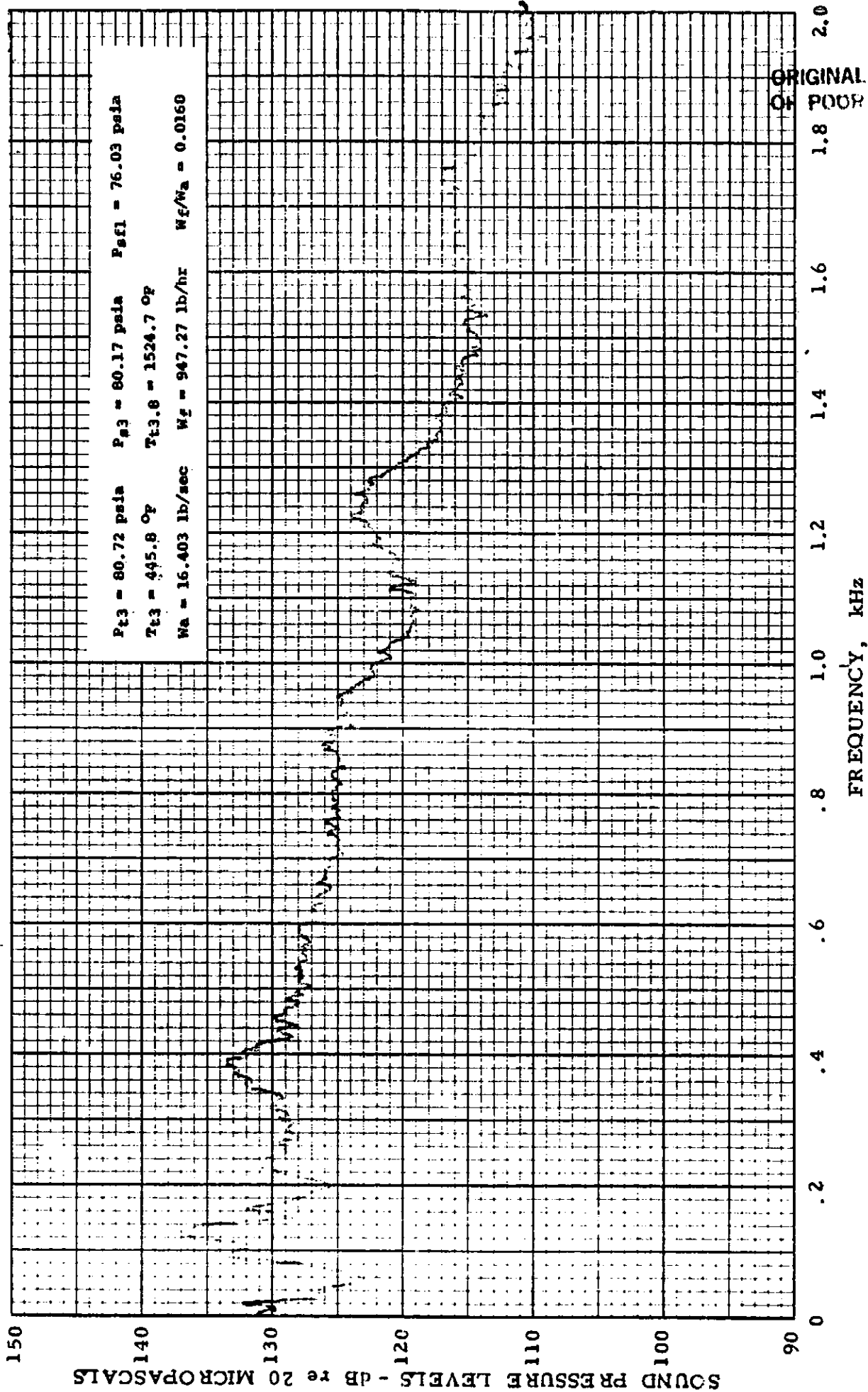
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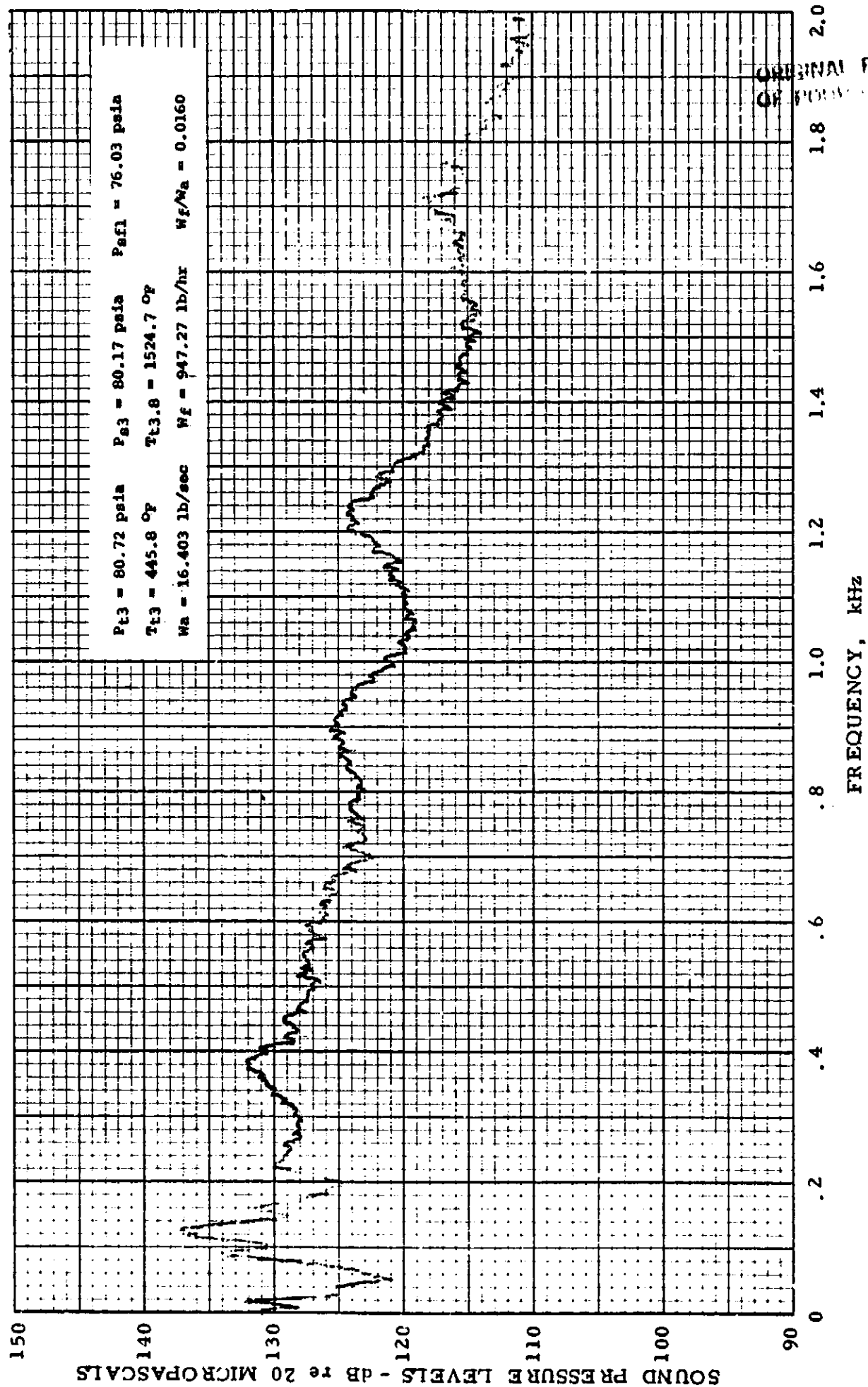


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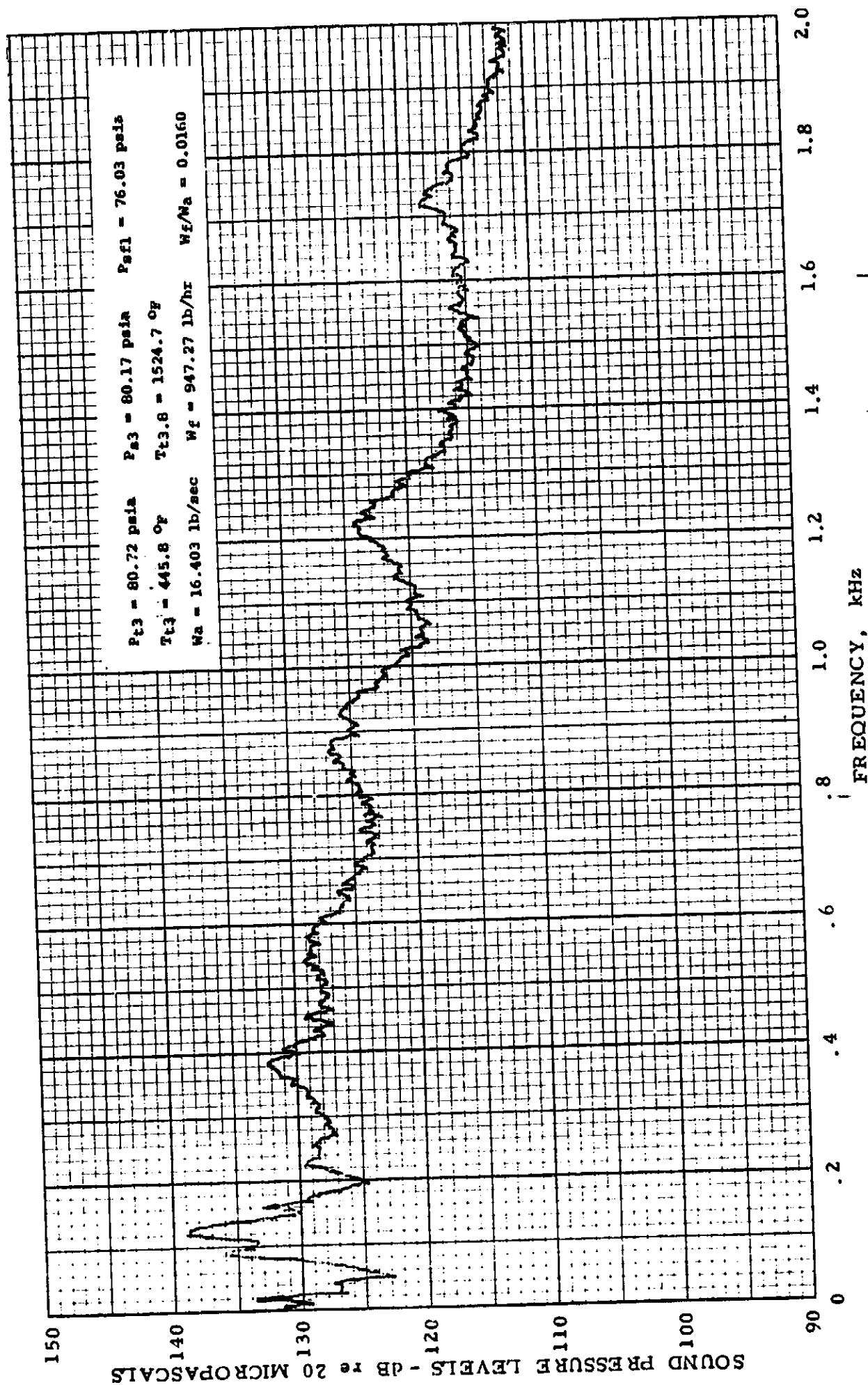


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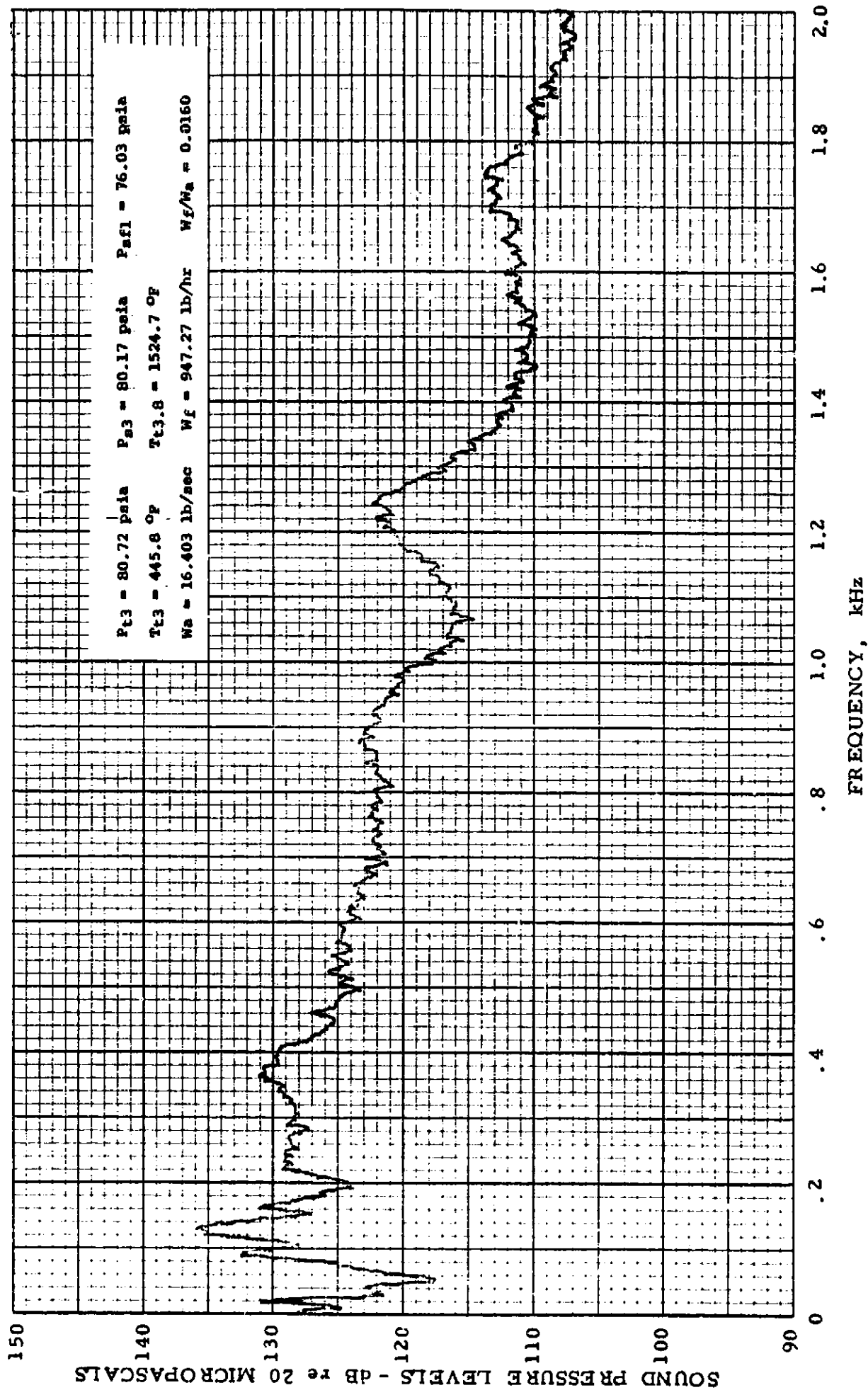
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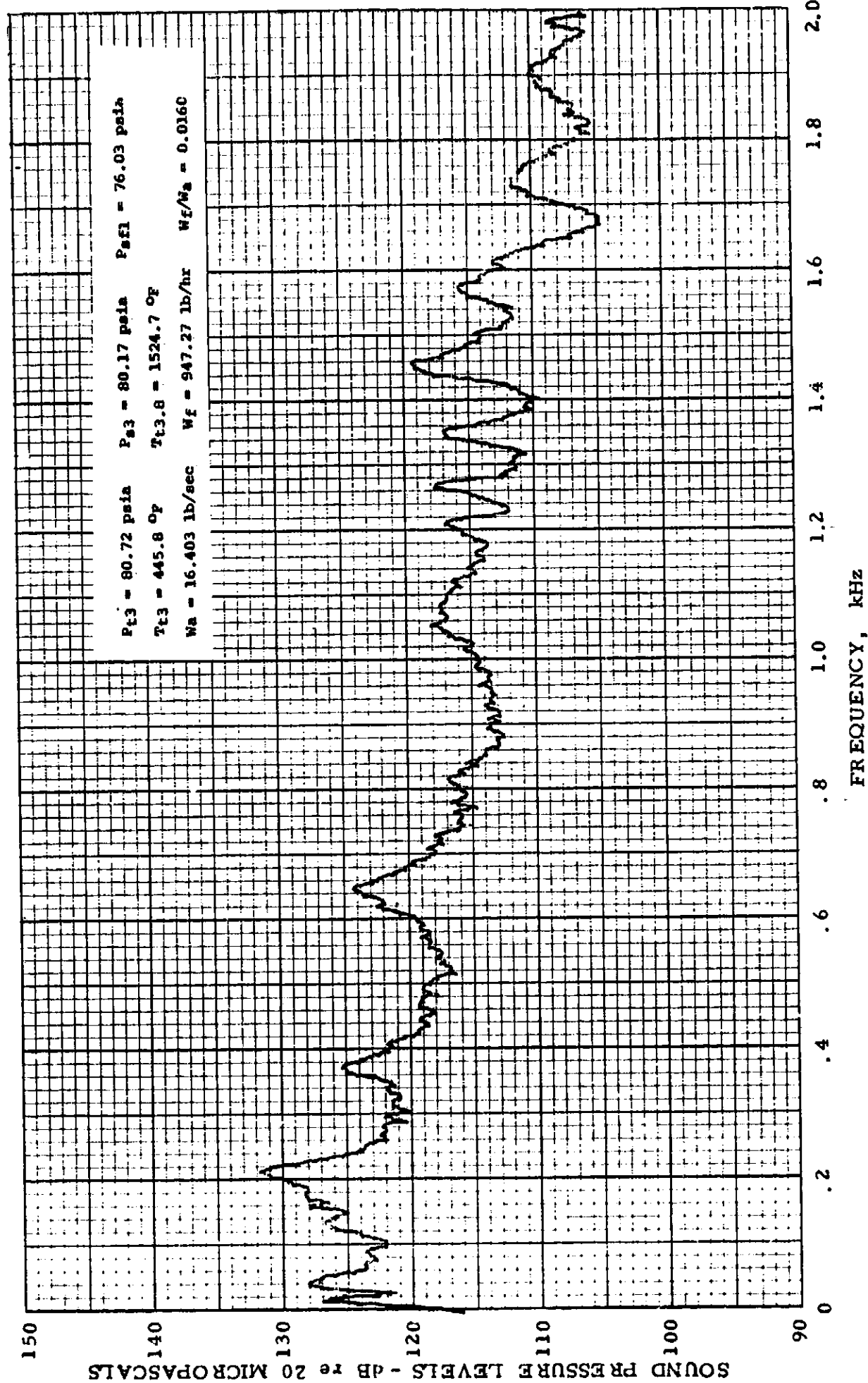
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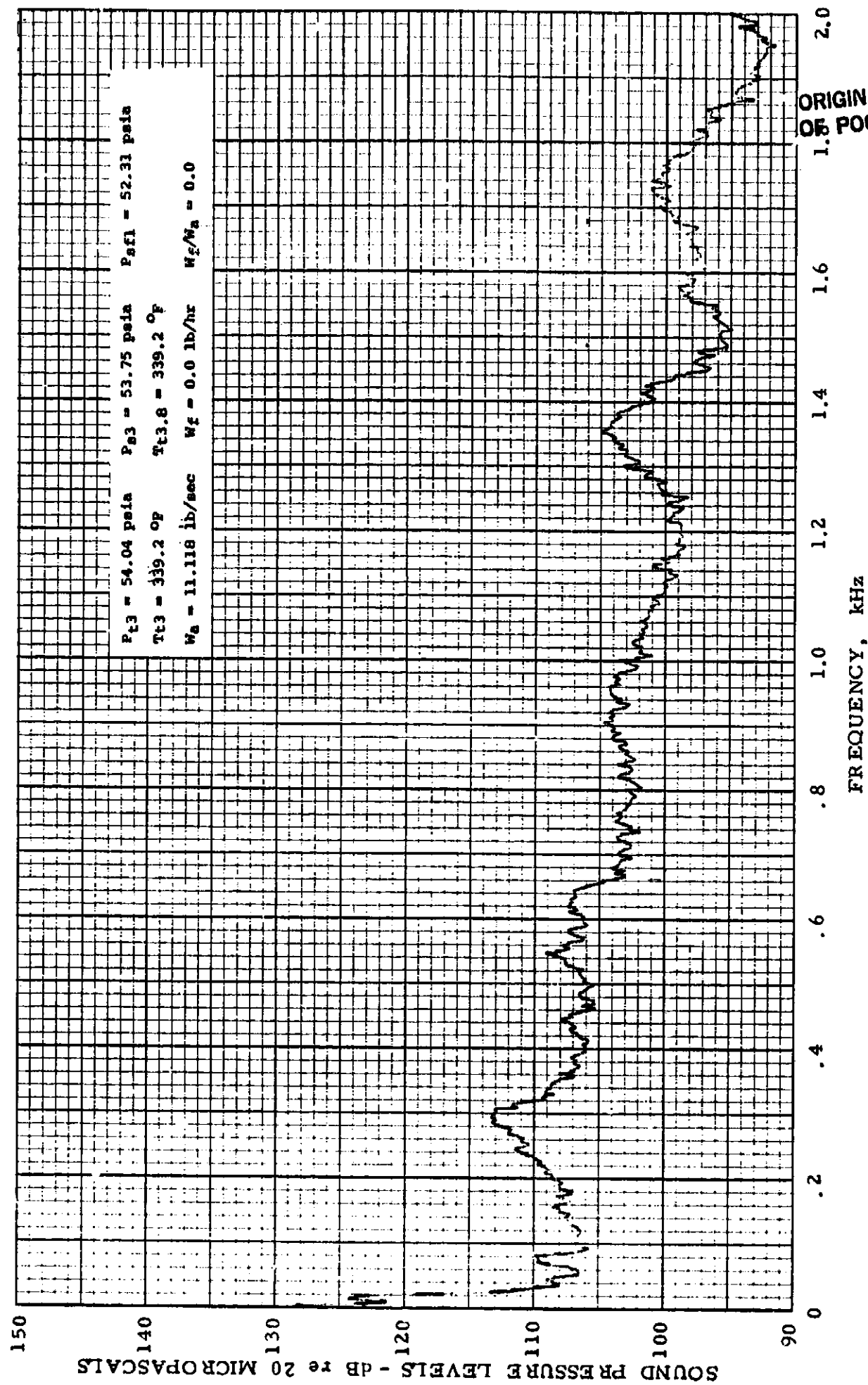
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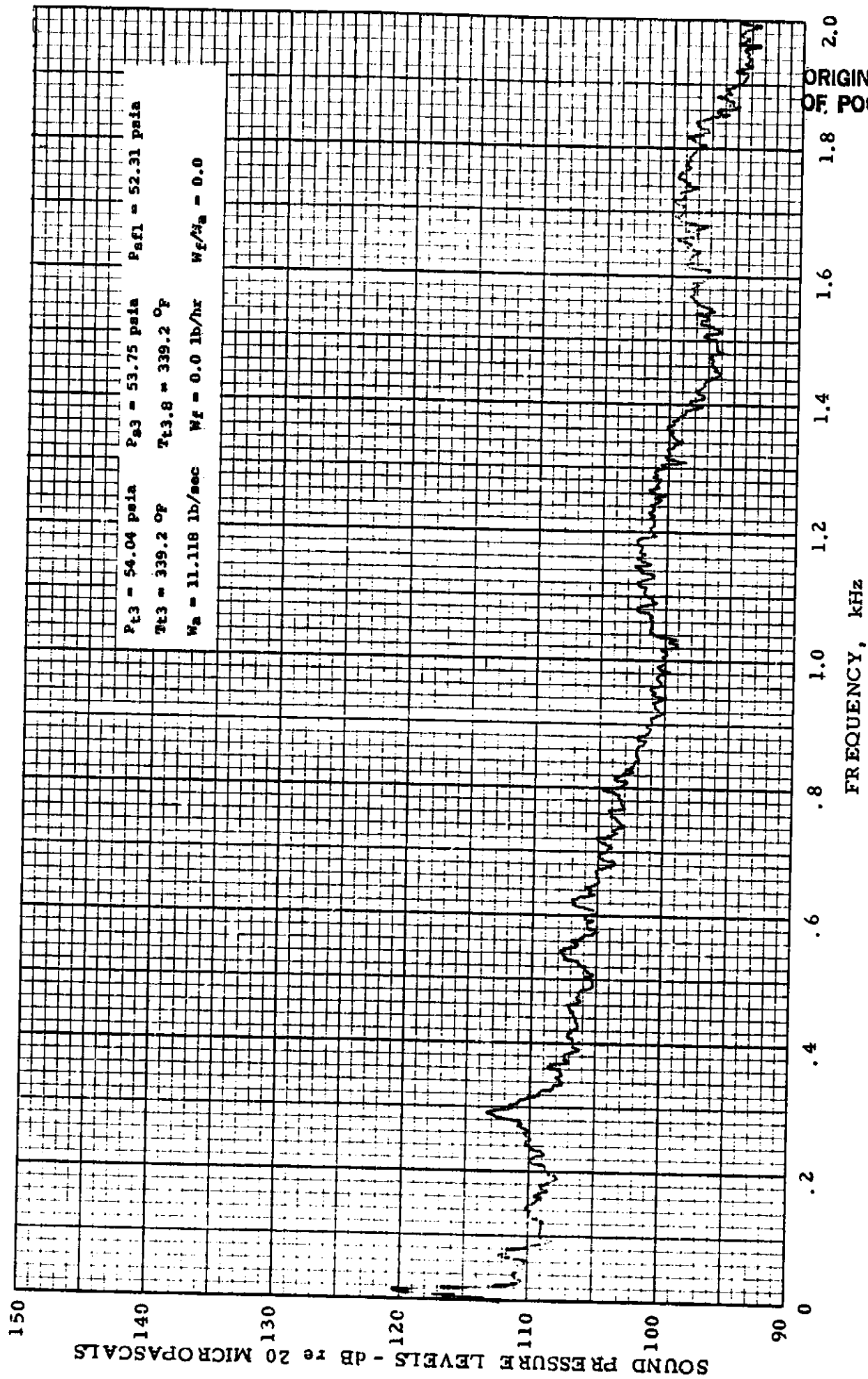
APPENDIX C

GROUP V



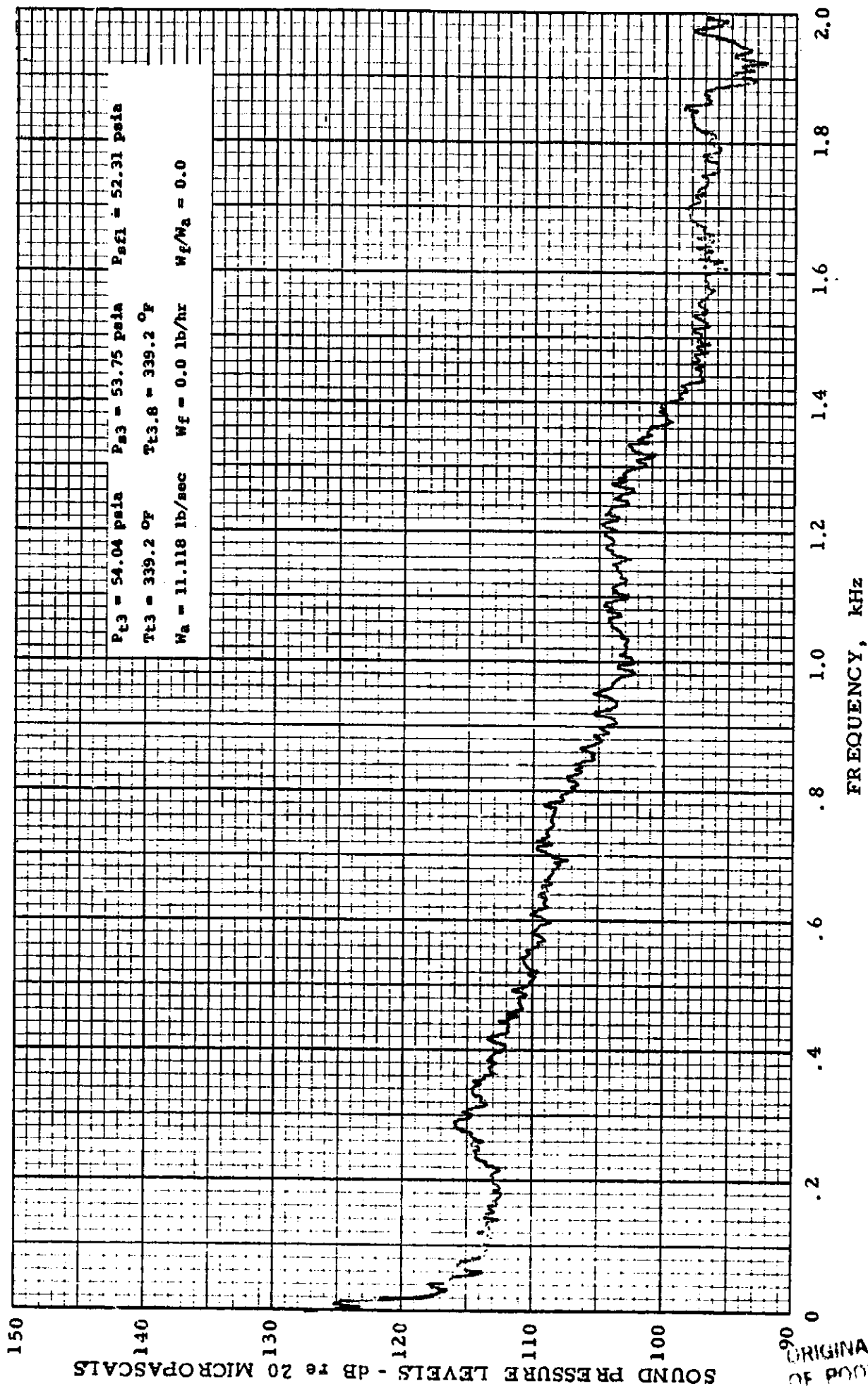
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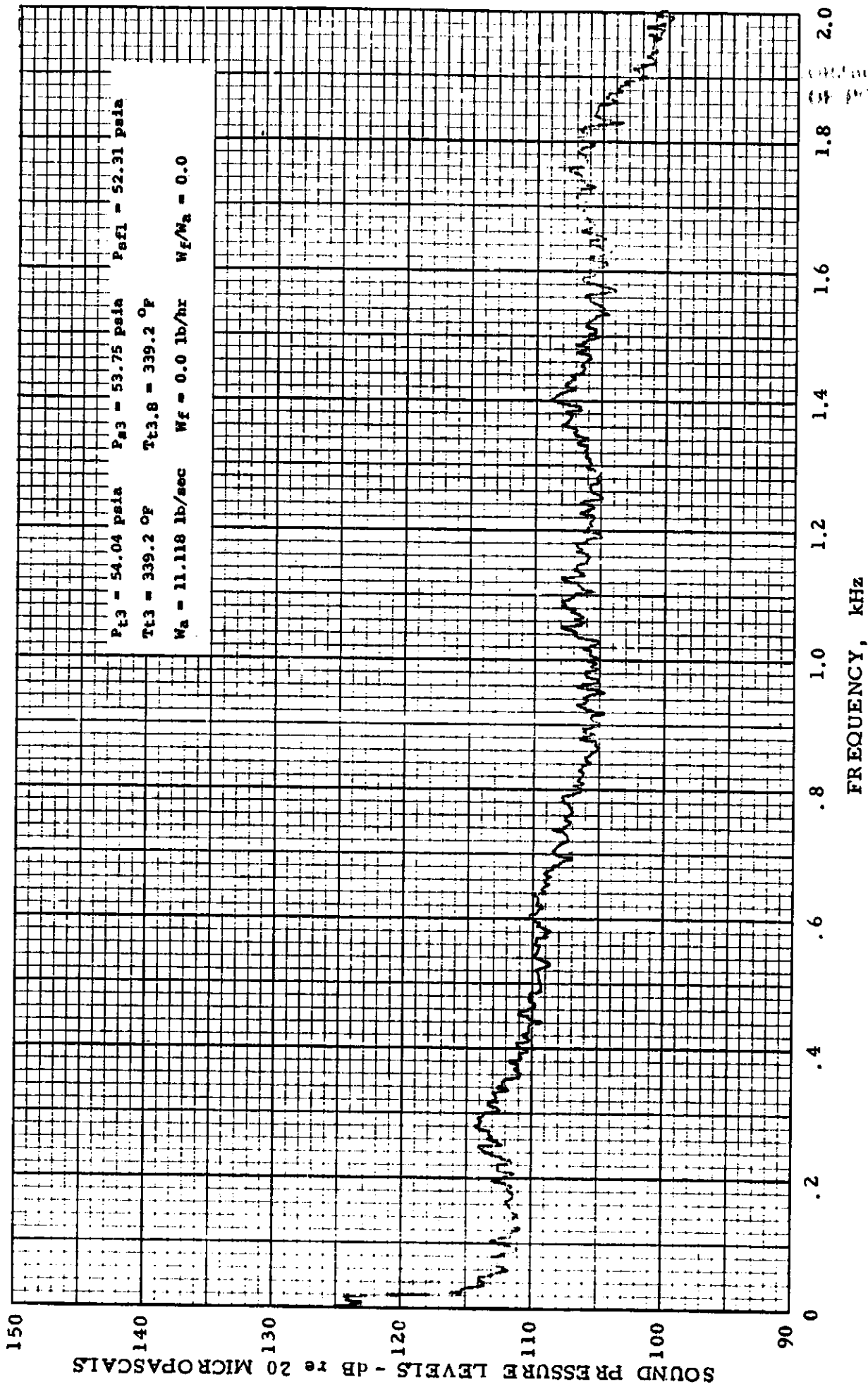


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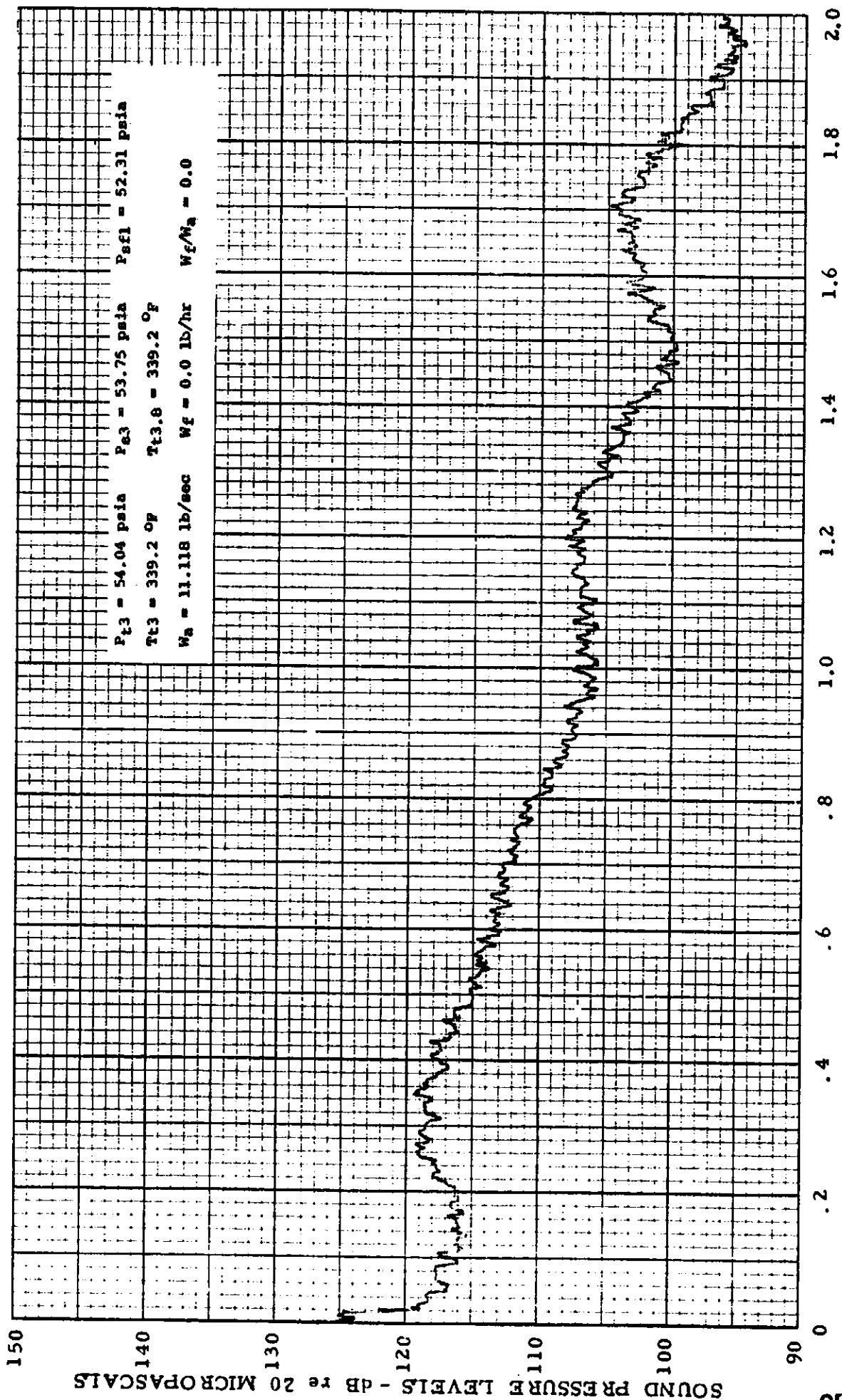


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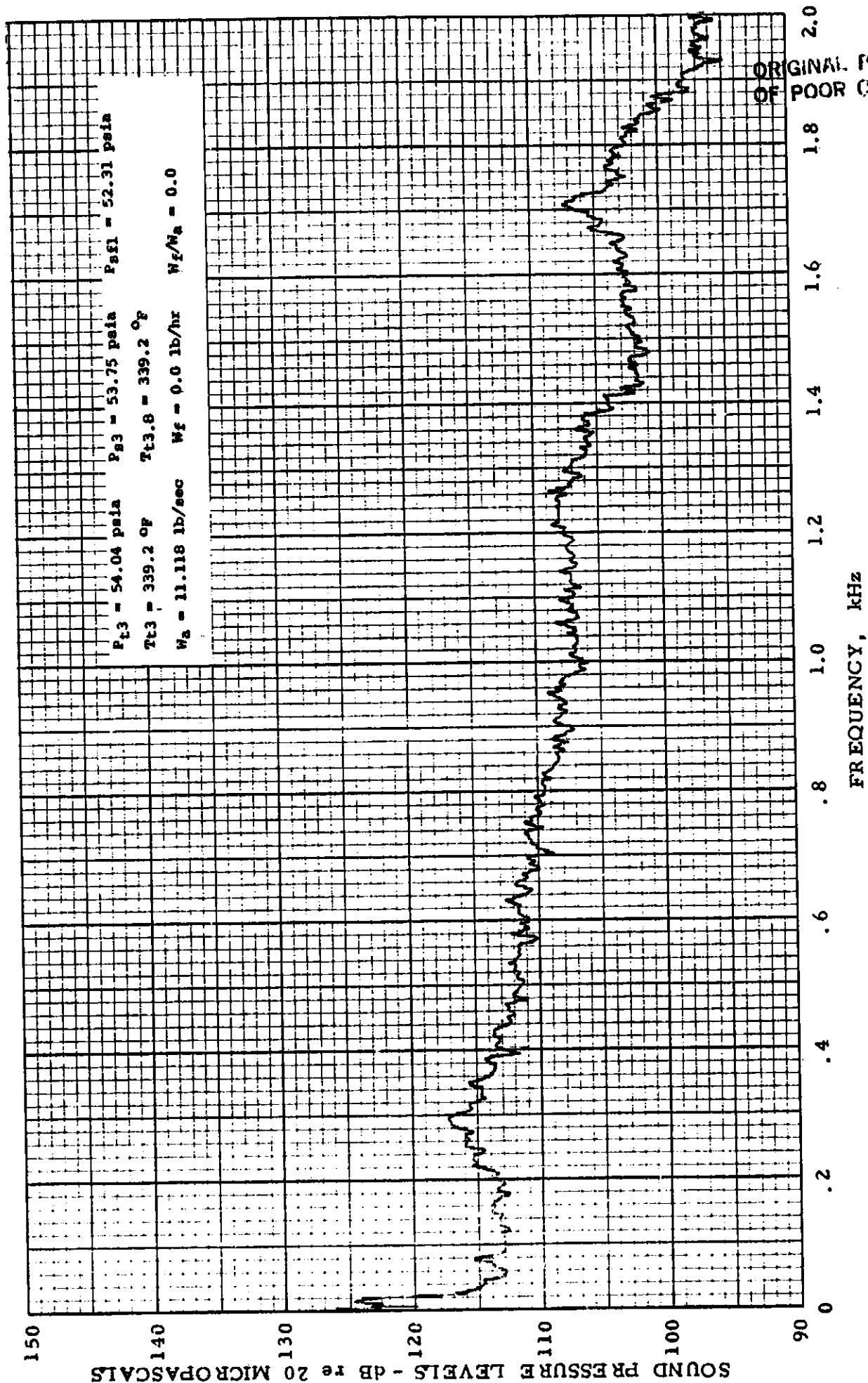
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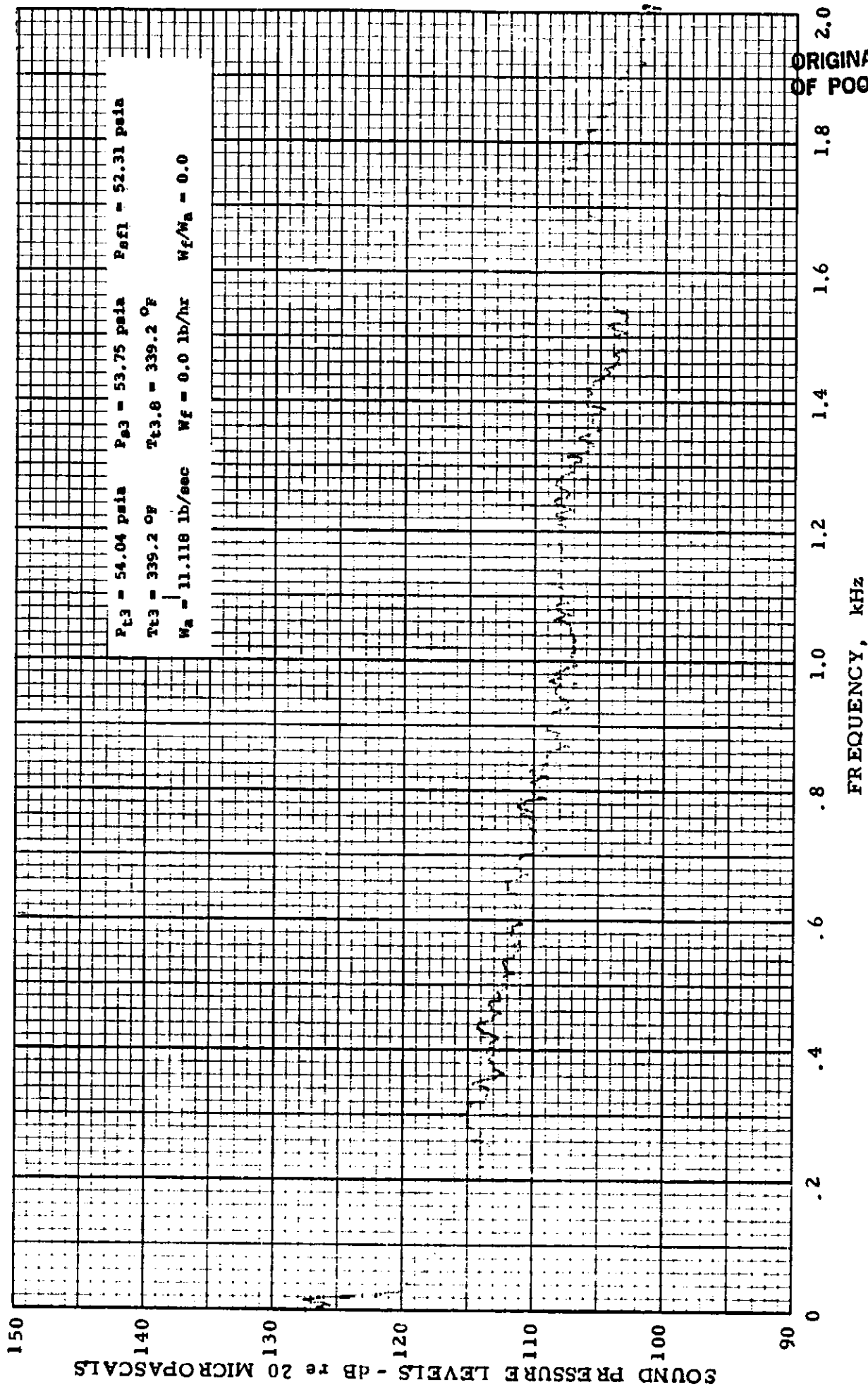


FREQUENCY, kHz

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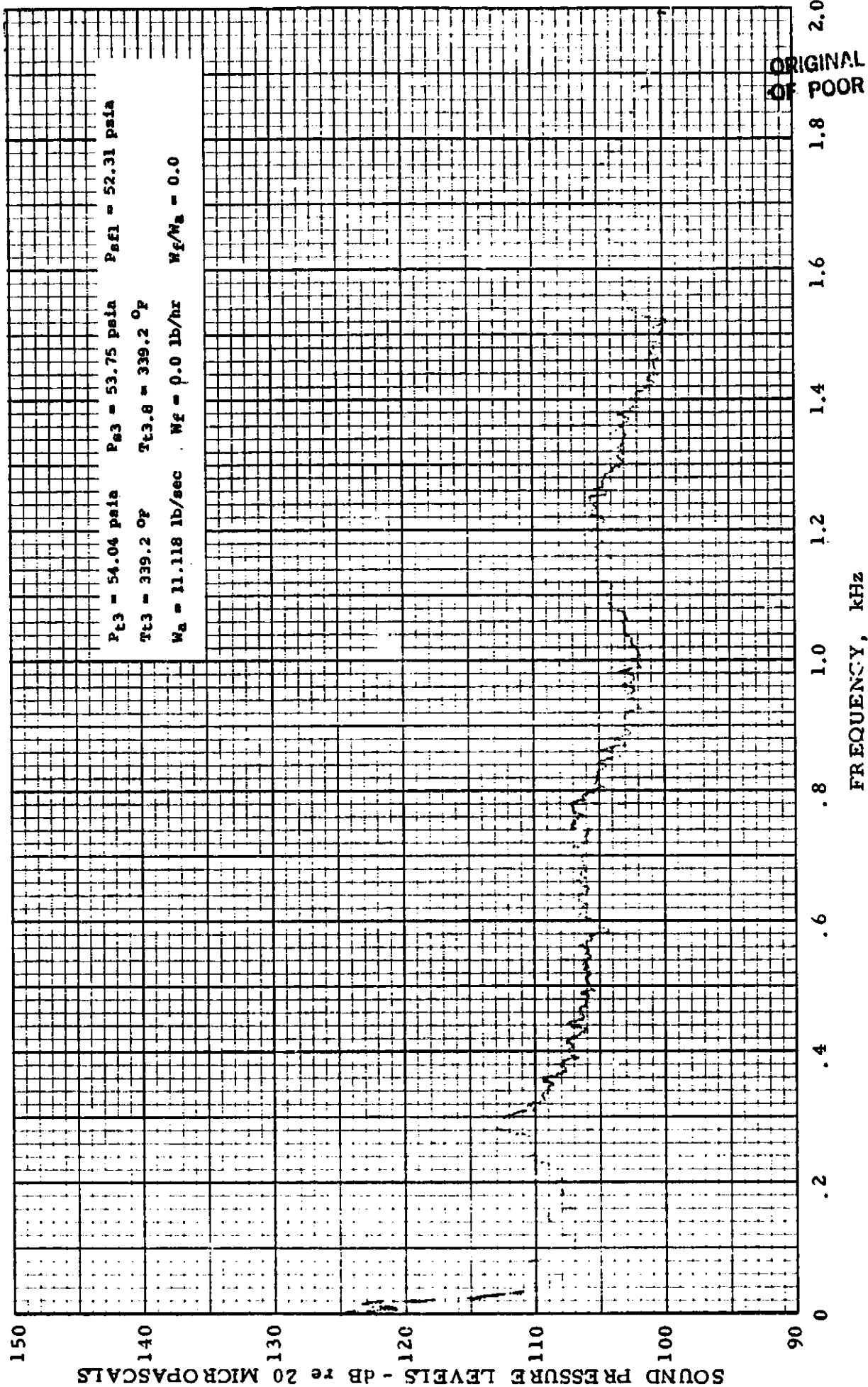


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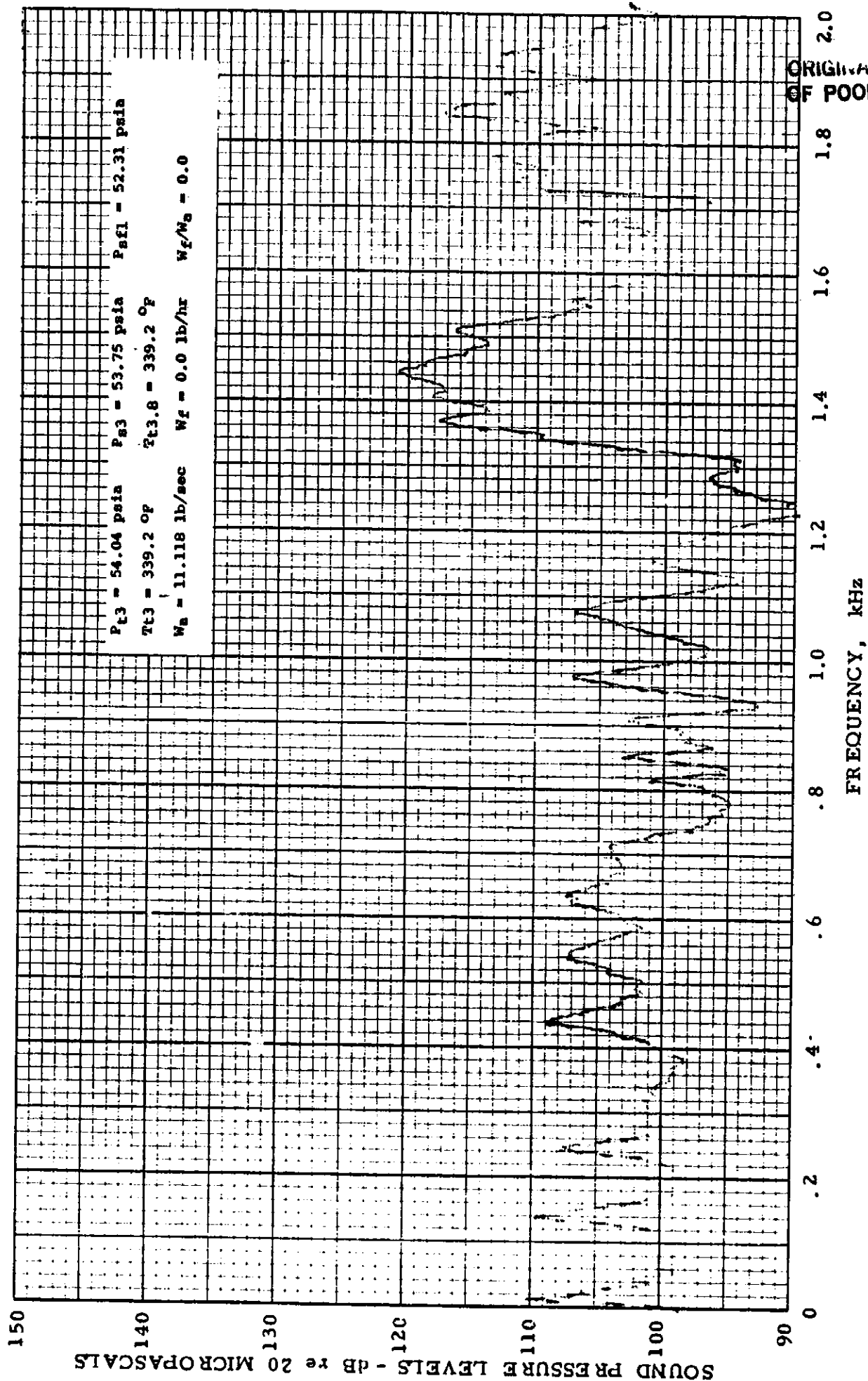


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NARROW BAND SPECTRUM AT PROBE NUMBER 5 DURING RUN POINT NUMBER 205

FREQUENCY, kHz

SOUND PRESSURE LEVELS - dB re 20 MICROPASCALS



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NARROW BAND SPECTRUM AT PROBE NUMBER 10 DURING RUN POINT NUMBER 205